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EDITORIAL

Rajashraya, Research and *Sambhasha*

Rajashraya (state patronage) is critical for any system to flourish. Lack of state patronage compels a system to utilize most of its energy in carving out a space for itself and struggle for its survival. *Ayurveda* has experienced not only lack of such patronage but also a hostile state during pre-independence era. It is only due to the robustness of *Ayurveda* as a science and indefatigable efforts of the then *Vaidya* community that *Ayurveda* survived the virtual onslaught on its existence and continued to contribute to public health even during the pre-independence time. *Ayurveda* began to enjoy state patronage after independence and now there is full-fledged Ministry of AYUSH and taking logical steps for development of *Ayurveda* like declaring to celebrate **National Ayurveda Day** every year on *Dhanwantari Trayodashi*. The Government and the Ministry are proactively and aggressively pushing *Ayurveda* to become a mainstream health care system. To become a mainstream player, *Ayurveda* should visibly contribute inter alia to the main health challenges that the country faces. Keeping in line of this objective, the Ministry of AYUSH has declared Madhumeha as the central theme for *Ayurveda* Day – 2016 and the year 2016-17. Diabetes mellitus is gradually becoming to be the leading health challenge across the globe and India has the dubious distinction of becoming the diabetic capital of Globe soon. Considering the lifestyle related etiology and multi-factorial nature of *Madhumeha* and the inherent strength of *Ayurveda* to manage lifestyle and multifactorial diseases owing to its holistic approach in healthcare, *Ayurveda* is perhaps the best system to manage and prevent this menace.

Research is an integral part in the development journey of any system and research in *Ayurveda* has remained a continuous facet in its long and illustrious journey. But, research must be relevant to the time, contemporary in its approach, methodology, tools and interpretation for benefits to trickle down to the entire society. We cannot also remain oblivious to the reality that there are other systems of healthcare that are contributing to the society. Thus, collaboration and complementation is the logical order of the day. We should respect the fact that *Ekamsatyamviprahvahudhahvadanti* i.e. health is the ultimate truth which all the systems are pursuing, as aptly said by *Charaka–Tadartham hi vedoayamsamprakshitah*. Our main objective is to improve the health of the society and we must collaborate with and borrow from any other discipline for our benefit. Therefore, our research in *Madhumeha* must be holistic, multi- disciplinary and should incorporate already obtained understandings from other systems and utilize tools available to the world. As *Swami Vivekananda* had said that we cannot remain in our well and consider our well as the largest. We must explore other wells too. No doubt, some research findings in this manner is meandering its way through the sea of research. But their numbers are few and needs to be increased significantly.

Constructive and sustained debate helps in enhancing knowledge and honing of skills of all stake holders and in dissemination of knowledge. With this objective National Institute of *Ayurveda* had organized **SAMBHASHA** - a 3 day International conference to deliberate upon the works done and the way forward in the managing *Madhumeha* in *Ayurveda*. The conference was a grand success and was attended by more than 1200 Delegates from across the globe. More than 500 scientific papers/orations were presented in this conference. Selected papers are being published in this issue of JOA with a confidence that it will help *Ayurvedic* fraternity in the management of *Madhumeha*. These papers contain seeds for newer thinking and we hope these will ignite more scientific, multi-disciplinary and holistic ideas among the readers. And nothing can replace a good idea in the pursuit of research.

Prof. Sanjeev Sharma
Director

Editorial Forum

Report - *Sambhasha* 2017

*Dr. Pawankumar Godatwar

While WHO projects that diabetes will be the 7th leading cause of death in 2030[1], the number of people with diabetes has already risen from 108 million in 1980 to 422 million in 2014[2]. In 2012, an estimated 1.5 million deaths were directly caused by diabetes and another 2.2 million deaths were attributable to high blood glucose[3]. Apart from being a leading cause of death, diabetes is a major cause of blindness, kidney failure, heart attacks, stroke and lower limb amputation.[4] WHO recommends Healthy diet, regular physical activity, maintaining a normal body weight and avoiding tobacco use as the ways to prevent or delay the onset of type 2 diabetes, and also that diabetes can be treated and its consequences avoided or delayed with diet, physical activity, medication and regular screening and treatment for complications[5]. The 2011 UN High-Level Meeting on Non-Communicable Diseases (NCDs) set a global target to halt the rise in the age-standardised adult prevalence of diabetes at its 2010 levels, by 2025. There were 69.1 million cases of diabetes in India in 2015. Considering the rapid growth in number of diabetic patients, Hon'ble Prime Minister Shri Narendra Modi in his address of 2nd International Day of Yoga had asked to dedicate the efforts to scale up prevention, strengthen care, and enhance surveillance of diabetes through Ayurveda and Yoga. In Ayurveda, the diabetes has been explained in detail under the broad umbrella of Prameha. Ayurveda has unique strength in prevention and control in diabetes due to its lipo-centric and individualized approach to the disease. However, the real potential of Ayurveda has not been exploited. Therefore, it was decided to select the "Prevention and Control of Diabetes through Ayurveda" as the theme for the year 2016-17.[6]

Against this background, the National Institute of Ayurveda, Jaipur was entrusted by the ministry of AYUSH to organize an international conference devoted to the focal theme of diabetes. In order to integrate existing international expertise in the field of *Madhumeha/Prameha*/diabetes, the NIA organized *"Sambhasha"* an international conference with experts from all over the world including India, U.S.A., Switzerland, Srilanka, Nepal and many other countries. Sambhasha-International Conference on the scope and role of Ayurveda in the management of *Madhumeha* (Diabetes Mellitus) and it's complications was held at NIA, Jaipur on February 5-6-7, 2017 and pursued the following goals:

(a) to share experience on existing knowledge in the prevention and management strategies of *Madhumeha* (DM) with specific focus on the Scope and Role of *Aushadha* (Medicine), *Anna* (Diet) *and Vihara* (Lifestyle) in the management of Madhumeha (Diabetes) and it's complications.

(b) to refine the conceptual framework of the *Madhumeha* (DM) and for harmonization of core indictors and

(c) to strengthen international collaboration.

The conference was structured as follows:

1. Plenary sessions
2. Parallel Sessions along 7 parallel tracks
   a. Forenoon
   b. Afternoon
3. Poster presentation sessions

*Organizing Secretary-Sambhasha-2017, Associate Professor and HOD, Dept. of Roga and Vikriti Vijnana, National Institute of Ayurveda, Amer Road, Jaipur

The tabular summary of the various sessions is as follows:

05th Feb	05 FA1	Lead Speaker – 3 Delivered -3 Chair- Prof. Subhash Ranade, Co-Chair- Dr. Surendra kumar Sharma, Co-ordinator-Dr. Sarvesh Agrawal	Paper Schedule -11 Paper Delivered -10	Best paper Dr. Sushant Sud
05th Feb	05 FA2	Lead Speaker – 2 Delivered -2 Chair - Prof Ram Kishor joshi, Co-Chair- Dr. Ish Sharma, Coordinator- Dr. Ajay Sahu	Paper Schedule -15 Paper Delivered -10	Best paper Dr. Shagufta Malhotra
05th Feb	05 FA3	Lead Speaker – 2 Delivered -2 Chair – Prof Naresh Sharma, Co-Chair- Dr. Anita Sharma, Coordinator – Dr. Ravi Kumar	Paper Schedule -15 Paper Delivered -13	Best paper Dr. Kapil Patil
05th Feb	05 FA4	Lead Speaker – 1 Delivered -1 Chair –Dr. Sunanda Ranade, Co-Chair- Dr. P.C. Mangal, Coordinator–Dr. Mahendra Prasad	Paper Schedule -15 Paper Delivered -14	Best paper Dr. Deepa
05th Feb	05 FA5	Co- Chair- Dr. K.V. Narsimha Raju, Coordinator- Dr. B. Swapana	Paper Schedule -15 Paper Delivered -12	Best paper Dr. Meenakshi
05th Feb	05 FA6	Lead Speaker – 3 Delivered -3 Chair- Dr. O.P. Dadhich Co-Chair–Dr. A.P.A. Jayashree, Coordinator- Dr. Harish Bhakuni	Paper Schedule -13 Paper Delivered -12	Best paper Dr. Seema Panday
05th Feb	05 FA7	Lead Speaker – 1 Delivered -1 Chair- Prof. SS Sawarikar, Co-Chair- Dr. Bani Ram Meena, Coordinator–Dr. Sandeep Lahange	Paper Schedule -15 Paper Delivered -15	Best paper Dr. Konica Gera
05th Feb	05 P1	Lead Speaker – 4 Delivered -3 Chair- Prof. MS Baghel, Co-Chair- Prof. Vijay Chaudhari, Coordinator- Dr. Reetu Sharma		
05th Feb	05 FB1	Lead Speaker – 2 Delivered -2 Chair- Dr. Sk Sharma Co- Chair- Prof. Anup Thakar, Coordinator- Dr. Uday Raj Saroj	Paper Schedule -13 Paper Delivered -13	Best paper Dr.S.M.S. Samara Koon

05th Feb	05 FB2	Lead Speaker – 1 Delivered -1 Chair- Dr. H.G,S.P. Hewageegana., Co-Chair- Dr. Mohan Lal Jaisawal, Coordinator- Dr. Kashinath	Paper Schedule -15 Paper Delivered -13	Best paper Dr. Thanuja Jagannath
05th Feb	05 FB3	Lead Speaker – 2 Delivered -2 Chair- Dr. K.R. Weera sekara, Co-Chair- Dr. Rama Murthy, Coordinator- Dr. Durgawati Devi	Paper Schedule -15 Paper Delivered -15	Best paper Dr. Megha Acharya
05th Feb	05 FB4	Lead Speaker – 3 Delivered -3 Chair- Dr. N. Prasanna Rao, Co-Chair- Prof. P. Hemanth, Coordinator- Dr. Aparna Sharma	Paper Schedule -10 Paper Delivered -10	Best paper Dr. Laxmi Saini
05th Feb	05 FB5	Lead Speaker – 2 Delivered -2 Chair- Prof. LN Sharma, Co-chair- Dr. HML Meena, Coordinator- Dr. SK Khandel	Paper Schedule -14 Paper Delivered -10	Best paper Dr. Rachana Paudel
05th Feb	05 FB6	Lead Speaker – 2 Delivered -1 Chair- Prof. YK Sharma, Co- Chair- Prof. Manoj Sharma, Coordinator- D. Sharad Porte	Paper Schedule -14 Paper Delivered -12	Best paper Dr. Amulya Dahal
05th Feb	05 FB7	Lead Speaker – 2 Delivered -2 Chair- Dr. Medha Kulkarni, Co- Chair- Dr. Govind Reddy, Coordinator- Dr. Kshipra Rajoria	Paper Schedule -15 Paper Delivered -15	Best paper Dr. Abhijeet Pachpor
06th Feb	06FA1	Chair- Dr. DC Katoch Co- Chair- Dr. M.W.S.J. Kumari, Coordinator- Dr. Shailza	Paper Schedule -14 Paper Delivered -14	Best paper Dr. Sowmya PC
06th Feb	06FA2	Lead Speaker – 1 Delivered -1 Chair- Prof. Tanuja Nesari, Co- Chair- Dr. Sunil Jaiswal, Coordinator- Dr. Sumit Nathani	Paper Schedule -16 Paper Delivered -12	Best paper Dr. Ashwini BV
06th Feb	06FA3	Lead Speaker – 2 Delivered -2 Chair- Dr. Sushila Sharma, Co- Chair – Dr. Sanhajutha, Coordinator- Dr. Rakesh Nagar	Paper Schedule -13 Paper Delivered -09	Best paper Dr. Sachin Sharma

06th Feb	06FA4	Lead Speaker – 2 Delivered -2 Chair-Prof. Gurdip Singh, Co-Chair-Dr. Vandana Sirohi, Coordinator- Dr. SK Mandal	Paper Schedule -14 Paper Delivered -13	Best paper Dr. Pratibha
06th Feb	06FA5	Lead Speaker – 1 Delivered -1 Chair- Prof. Abhichal Chatopadhyay, Co-Chair- Dr. CB Sharma, Coordinator- Dr. Sarvesh Singh	Paper Schedule -15 Paper Delivered -13	Best paper Dr. Seetha Chandran
06th Feb	06FA6	Lead Speaker – 3 Delivered -3 Chair- Prof. PK Prajapati, Co-Chair- Dr. Govind Shukla, Coordinator- Dr. Sanjay Kumar	Paper Schedule -14 Paper Delivered -08	Best paper Dr. Krushn Kumar Taviad
06th Feb	06FA7	Lead Speaker – 1 Delivered -1 Chair- Prof. SK Khandel, Co-Chair- Hemraj Meena, Coordinator-Dr. Narendra Singh	Paper Schedule -19 Paper Delivered -16	Best paper Dr. Priyanka
06th Feb	06P2	Lead Speaker – 3 Delivered -3 Chair-Dr. Rajesh Kotecha, Co-Chair-Prof. Tanuja Nesari, Coordinator-Dr. Sunil Yadav	Discussion	Discussion
06th Feb	06P3	Lead Speaker – 2 Delivered -2 Chair-Prof. BL Gaur, Co-Chair-Prof. Kamalesh Sharma, Cordinator- Dr. Govind Pareek	Discussion	Discussion
06th Feb	06FB1	Lead Speaker – 2 Delivered -2 Chair- Prof. Kartar Singh Dhiman, Co-Chair-Dr. Rin Zin Lamo, Coordinator- Dr. Reetu Sharma	Paper Schedule -12 Paper Delivered -11	Best paper Dr. Sunil Thakur
06th Feb	06FB2	Lead Speaker – 1 Delivered -1 Chair- Prof. MS Meena, Co-Chair- Prof. Kamini Kaushal, Coordinator-Dr. Rajendra Sharma	Paper Schedule -16 Paper Delivered -16	Best paper Dr. Monika Sharma
06th Feb	06FB3	Lead Speaker – 2 Delivered -2 Chair-Dr.N Srikanth, Co-Chair-Dr. Satya Narayan Dornala, Coordinator-Dr. Harish Bhakuni	Paper Schedule -13 Paper Delivered -13	Best paper Dr. Sangeeta Tanwar

06th Feb	06FB4	Lead Speaker – 1 Delivered -1 Chair- Prof. Rajyavradhan Singh Rai, Co-Chair-Dr. Avdesh Bhatt, Coordinator- Dr. Mohar Pal Meena	Paper Schedule -14 Paper Delivered -14	Best paper Dr. Bhanu Tank
06th Feb	06FB5	Lead Speaker – 3 Delivered -3 Chair-Prof. GS Indoriya, Co-Chair- Dr. J Manohar, Coordinator- Dr. B Puspalatha	Paper Schedule -15 Paper Delivered -15	Best paper Dr. Asutosh Sharma
06th Feb	06FB6	Lead Speaker – 3 Delivered -3 Chair- Dr. Kamini Dhiman, Co-Chair- Dr. Suphannee Thanyaphoo, Coordinator- Dr. Sanjay Agrawal	Paper Schedule -10 Paper Delivered -10	Best paper Dr. Poonam Gaur
06th Feb	06FB7	Lead Speaker – 2 Delivered -2 Chair-Dr. Baldev Kumar Dhiman, Co- Chair- Dr. HC Gupta, Coordinator- Dr. Ravi Kumar	Paper Schedule -17 Paper Delivered -17	Best paper Dr. Shiv Ranjani
07th Feb	07FA1	Lead Speaker – 2 Delivered -2 Chair- Prof. Mahesh Chandra Sharma, Co-Chair-Prof. Chakrapany Sharma, Coordinator-Dr. Sanjay Agrawal	Paper Schedule -11 Paper Delivered -11	Best paper Dr. Saurabh Jain
07th Feb	07FA2	Lead Speaker – 1 Delivered -1 Chair- Govind Gupta, Co-Chair-Dr. Vishal Verma, Coordinator-Dr. Hetal Dave	Paper Schedule -11 Paper Delivered -11	Best paper Dr. Laxmi Maharana Dr. Bilal Ahmad Wali
07th Feb	07FA3	Lead Speaker – 2 Delivered -2 Chair- P Suresh, Co-Chair-Dr. Ruta Kadam, Coordinator – Dr. Rajendra Sharma	Paper Schedule -13 Paper Delivered -13	Best paper Dr. Deepak Suman
07th Feb	07FA4	Lead Speaker – 1 Delivered -1 Chair- Dr. Kandarp Desai, Co-Chair- Dr. V Nageswar Rao, Coordinator- Dr. Sumit Nathani	Paper Schedule -15 Paper Delivered -15	Best paper Dr. Nur Mohd. Iqbal Chowdhury
07th Feb	07FA5	Lead Speaker – 1 Delivered -1 Chair- Prof. Srikant Kashikar, Co- Chair- Dr. Jagdish Bunkar, Coordinator- Dr. Kashinath	Paper Schedule -12 Paper Delivered -12	Best paper Dr. Pooja Arya

07th Feb	07FA6	Lead Speaker – 1 Delivered -1 Chair- Prof. Shyam Sunder Sharma, Co- Chair – Dr. Shamsa Fiaz, Coordinator- Dr. Ashok Kumar	Paper Schedule -15 Paper Delivered -15	Best paper Dr. Naveen B
07th Feb	07FA7	Lead Speaker – 1 Delivered -1 Chair-Prof. Mahesh Vyas, Co- Chair- Prof. Santosh Nair, Coordinator – Dr. Sailza	Paper Schedule -15 Paper Delivered -15	Best paper Dr. Nidhi Rathore
07th Feb	07P4	Lead Speaker – 3 Delivered -3 Chair- Prof. O P Upadhyaya, Co- Chair-Prof. Hemant Kushwaha, Coordinator-Dr. Shrinidhi Acharya	Discussion	Discussion
07th Feb	07P5	Lead Speaker – 4 Delivered -4 Chair- Prof. Abhimanyu Kumar, Co-Chair- Prof. Mahesh Dixit, Coordinator- Dr. Nisha Kumari Ozha	Discussion	Discussion

Poster Presentation

Total Posters Scheduled - 207 Theme- 7

Finalist – 16 Best Poster Awards- 07

Lead Speeches Scheduled –	75
Lead Speeches Delivered-	73
Oral Paper Scheduled -	473
Oral Paper Delivered -	447
Posters Scheduled	207
Delivered	176

The conference also featured an Expo which garnered a lot of interest from various stake holders of Ayurveda fraternity ranging from Pharma industry, Manufacturers and suppliers of Diagnostic tools, Book publishers. The organizing committee thanks all these exhibitors for their wholehearted support.

1. Mathers CD, Loncar D., Projections of global mortality and burden of disease from 2002 to 2030. PLoS Med, 2006, 3(11):e442.

2. http://www.who.int/mediacentre/factsheets/fs312/en/

3. ibid

4. Global report on diabetes, World Health Organization, Geneva, 2016

5. ibid

6. Manoj Nesari, Foreword, Protocol for 'Prevention and Control of Diabetes through Ayurveda', Released on First National Ayurveda Day, 28th Oct. 2016

Clinical Study

Therapeutic Study of *Shilajeet* in *Vatik Prameha Upadrava* (Diabetic Neuropathy)

*Dr. Swapnali Das, **Dr. Aarif Khan, ***Dr. Sisir Kumar Mandal, ****Dr. Surendra Kumar Sharma *****Dr. Pawankumar Godatwar

Abstract-

Introduction-Chronicity and poor blood glucose control leads to complication which is a unavoidable condition in case of diabetes mellitus. Accessible, affordable and effective treatment therapy has become a global demand in this regard. So, present study is aimed at to achieve the goal and to assess the efficacy of *Shilajeet* in the management of *Prameha* and *Vatik Prameha Upadrava*.

Material and Method-Total 35 patients were registered, the age group above 18 years irrespective of either sex, diagnosed case of type 2 diabetes mellitus and having complication patients were selected for trial. All the patients were divided into three sub-group on the basis of HbA_1C level Group A (6.5-7 %), Group B (7.1-8.5 %), Group C (> 8.5 %). Subjective criteria were *Prabhuta Avila-Mutrata, Trishna, Kara-Padadaha & Suptata* etc and Wilcoxon matched-Pairs signed rank test used for it. Objective criteria were CBC, ESR, HbA_1C, FBS, PPBS, Lipid profile,Urine test and Paired't' test used for it. 32 patients had completed the trial and administered *Shilajeet* capsule 500 mg BD for 2 months.

Results- 100 % improvement was found in *Prabhuta-Mutrata* and *Avila-Mutrata* in Group B & C and statistically it is significant. In Group C HbA_1C level BT mean score was 9.26 which declined to 7.53, so it indicates 18.76 % relief and statistically it is significant (P = 0.0020). Present study indicated that there is more improvement subjective parameters than the objective parameters.

Key words- *Prameha, Shilajeet, Upadrava, Prabhuta Avila-mutrata.*

सारांश –

प्रस्तावना – वर्तमान समय में प्रमेह एक प्रमुख विकार है। प्राय: यह देखा गया है कि अनियमित दिनचर्या प्रमेह का एक प्रमुख कारण है। प्रमेह उपद्रव की व्यापकता और प्रसार को देखते हुए, इसके प्रबन्धन के लिए प्रभावी और सुरक्षित औषधि की जरूरत है। उक्त चिकित्सीय परीक्षण वातिक प्रमेह उपद्रव के प्रबन्धन में शिलाजीत की चिकित्सात्मक प्रभावकारिता निर्धारित करने के लिए किया गया था। **विधि व सामग्री** – राष्ट्रीय आयुर्वेद संस्थान में चिकित्सीय परीक्षण 18 वर्ष से अधिक की आयुवर्ग के 35 वातिक प्रमेह उपद्रव के आतुरों पर किया गया। ग्रुप ए में HbA1C (6.5-7 %), ग्रुप बी में HbA1C (7.1-8.5 %), ग्रुप सी में HbA1C (> 8.5 %) था। चिकित्सकीय मूल्याकंन प्रभूत मूत्रता व आविलमूत्रता आदि मानदंडों और CBC, ESR, HbA1C, FBS, PPBS, Lipid profile, Urine test के आधार पर किया गया। 35 आतुरों पर यह अध्ययन पूर्ण किया गया और उन्हें शिलाजीत केप्सूल मात्रा 500 मिलिग्राम प्रतिदिन दो बार 2 माह तक दिया गया। **परिणाम** – ग्रुप बी और ग्रुप सी में प्रभूत मूत्रता व आविल मूत्रता में लाभ 100 प्रतिशत रहा जो सांख्यिकी की दृष्टि से अति महत्व का सिद्ध हुआ। ग्रुप सी में HbA1C 9.26 से 7.53 हुआ व 18.76 प्रतिशत लाभ रहा जो सांख्यिकी की दृष्टि से महत्व का सिद्ध हुआ। इस अध्ययन में शिलाजीत से चिकित्सा पश्चात् लक्षणों पर प्रभाव लेबोरेट्री टेस्ट से अच्छा रहा।

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Clinical Study

Therapeutic Study of *Shilajeetin Vatik Prameha Upadrava* (Diabetic Neuropathy)

Dr. Swapnali Das, Dr. Aarif Khan, Dr. Sisir Kumar Mandal
Dr. Surendra Kumar Sharma, Dr. Pawankumar Godatwar

Introduction-

Prameha has been known to the Indian system of medicine since *Vedic* period. If a patient of *prameha* doesn't follow the diet and regimen which are prescribed by *Acaryas*, *upadrava* may develop. *Upadrava* or complication occurs as a sequel following and resulting from the main disease.[1] It is more trouble some than the main disease itself, because it appears in the later stages when the body is already weakened. Hence the physician should be very prompt in the treatment of complication. Due to *Oja* and *Shleshma Vikriti*, patient of *Prameha* is prone to many complications. The disease produces *upadravas* affecting *marmasthanas* (Vital organs / part) of the body like – *Shir, Hridaya, Basti*. In *Prameha* general complication affecting these *Marmas* include CVA (cerebro vascular accident), Atherosclerotic changes resulting Cardiac disease and Nephropathies are found. *Prameha* patient dies usually due to *Prameha upadravas*. *Susruta* has described *Prameha* complication according to *dosha* predominance as *Vataja, pittaja* and *kaphaja*.[2] The *Vatikprameha upadrava* can be co-related with Diabetic Neuropathy.

Diabetes Mellitus is known to man kind since antiquity, is a global health problem which is growing in full pace, and alarming the world as a non-infectious pandemic. With an estimated 366 million people in 2011 and by 2030 this will have risen to 552 million people suffering from Diabetes Mellitus.[3] Now, India is having the largest number of diabetics in the world and gets the name 'Diabetic capital'.[4] Diabetes mellitus is a chronic disease of developing countries like India. It is estimated by International Diabetic Federation (IDF) that by 2025 every fifth diabetic subject in world will be an Indian.[5] More than 60% of diabetic are affected by neuropathy, which includes distal symmetrical polyneuropathy (DSPN), mononeuropathis and a variety of autonomic neuropathies causing erectile dysfunction, urinary incontinence, gastroparesis and a nocturnal diarrhea. Accelerated lower extremity arterial disease in conjuction with neuropathies makes diabetes mellitus account for 50% of all non-traumatic amputation in United States.

Chronicity and poor blood glucose control leads to complication which is an unavoidable condition in case of diabetes mellitus. Accessible, affordable and effective treatment therapy has become a global demand in this regard. So, present study is aimed at to achieve the goal. For this purpose *Shilajeet*, a *Rasayan* is selected as a trial drug as complication of *Prameha* and is associated with *dhatukshay*.[6]

Aims and objectives :

To assess the efficacy of *Shilajeet* in the management of *Prameha* and *Vatik Prameha Upadrava*.

Materials and Method:

This study was conducted under the following steps-

Selection of Patients :

The patients for the clinical study were selected from OPD and IPD of NIA Hospital and SSBH, Jaipur after screening them as per *Ayurvedic* and Modern criteria for complication of *Prameha*. Selection was carried out on the basis of relevant history, signs and symptoms and laboratory investigations. A written information and consent form had been given to the patients. The patients were explained about the purpose, procedures and possible side-effects of the trial. Total 35 patients were registered for the study, but 32 patients had completed the trial.

Inclusion criteria:

- Patient in the age group above 18 years irrespective of either sex.
- Diagnosed case of type 2 diabetes mellitus.
- Patient having complication which are mentioned in modern and *Ayurvedic* classics.

Exclusion criteria:

- Patient in the age less than 18 years.
- Patients with major complication like hypertension, cardiopathy, nephropathy etc.
- Patient with secondary DM caused due to pancreatectomy, cystic fibrosis of pancreas.
- Pregnant woman.

Assessment criteria:

a. Subjective Parameters :

1. *Prabhuta Mutrata* (Polyuria) *2. Avila Mutrata* (Turbidity in urine) *3. Kara- Padadaha* (Burning sensation in hand and feet) *4. Kara-Padasuptata* (Loss of sensation in leg and feet) *5. Udavarta 6. Hridgraha* (Pain in the heart) *7. Kshudha-Adhikya* (Increased Appetite) *8. Trishna* (Polydipsia) *9. Anidra* (Insomnia) *10. Daurbalya* (Weakness) *11. Avipaka* (Indigestion)*12. Vivandha* (Constipation) *13. Sotha*(Oedema) *14. Sandhi-shula*(Pain in the joints) *15. Rukshata* (Dryness of skin) *16. Swasa*(Dyspnoea) *17. Kasa*(Cough) *18. Murccha* (Syncope) *19. Bhram* (Delirium) *20. Bibheti* (Timidity) *21. Abhiksnam Dhyayati* (Constant worry) 22. *Duschaya* (Loss of complexion) 23. *Durmanah* (Bad mantation) *24. Ksaya* (Emaciation) *25. Putimamsa-pidika* (Boil /Carbuncle).

b. Objective Parameters :

- Haematological–CBC, ESR, HbA_1C and Biochemistry - FBS, PPBS, Lipid profile.
- Urine examination- Routine and Microscopic.

Trial Drug- *Shilajeet* described in *Susruta Samhita* was selected for the research work.

Drug – *Suddha Shilajeet* capsule with *Anupan* - Milk (20 ml)

Dose – 500 mg / capsule (1 capsule twice daily before meal)

Duration of the trial – 2 month and Patients were followed every 15 days.

Results- All the patients registered for the trial were divided into three sub-group for the analysis of data. Patients were divided on the basis of HbA_1C level. (Wilcoxon matched-Pairs signed test)

- Gr-A - 6.5 – 7% (n=8)
- Gr-B - 7.1 – 8.5% (n=14)
- Gr-C - > 8.5 (n= 10)

{Canadian Diabetes Association Clinical Practice Guidelines Expert Committee}

Table 1. Showing pattern of Subjective Parameters improvement in Group A:

Subjective Parameters	Mean		Diff.	Diff. %	S.D. (±)	S.E. (±)	'p' Value	Sig.
	BT	AT						
Prabhuta-mutrata	2.1	0.3	1.9	88.2	0.9910	0.3503	0.0156	Sig.
Avila-mutrata	0.3	0	0.3	100	0.4629	0.1636	0.5000	N.S.
Kara padadaha	1.6	0.4	1.3	76.9	0.7071	0.25	0.0156	Sig.
Kara padasuptata	1.3	0.3	1	80	0.5345	0.1150	0.0156	Sig.
Udavarta	0.4	0.3	0.1	33.3	0.3535	0.125	> 0.999	N.S.
Hridgraha	0.8	0.1	0.6	83.3	0.9161	0.3238	0.2500	N.S.
Anidra	1.1	0.6	0.5	44.4	0.559	0.2672	0.2188	N.S.

Daurbalya	2.1	0.9	1.3	58.8	0.4629	0.1636	0.0078	H.S.
Kshudha-adhikya	0.6	0.3	0.4	60.0	0.5175	0.1829	0.2500	N.S.
Trishna	1.0	0.25	0.75	75.0	0.7071	0.25	0.0625	N.S.
Avipaka	0.625	0.250	0.375	60.0	0.5175	0.1829	0.2500	N.S.
Vivandha	0.875	0.750	0.125	14.29	0.8345	0.2950	> 0.9999	N.S.
Sotha	0.75	0.50	0.25	33.33	0.4629	0.1636	0.5000	N.S.
Sandhi-shula	1.375	0.500	0.875	63.636	0.3535	0.125	0.0156	Sig.
Rukshata	1.625	0.750	0.875	53.846	0.3535	0.125	0.0156	Sig.
Swasa	0.875	0.250	0.625	71.429	0.5175	0.1829	0.0625	N.S.
Kasa	0.25	0.00	0.250	100.0	0.4629	0.1636	0.5000	N.S.
Murccha	0.375	0.00	0.375	100.0	0.5175	0.1829	0.2500	N.S.
Bhrama	0.750	0.125	0.625	83.33	0.5175	0.1829	0.0625	N.S.
Bibheti	1.375	0.250	1.125	81.82	0.3535	0.125	0.0078	H.S.
Abhiksnamdhyayati	1.375	0.875	0.500	36.36	0.5345	0.1889	0.1250	N.S.
Duschaya	1.875	1.250	0.625	33.33	0.5175	0.1829	0.0625	N.S.
Durmanah	1.9	0.8	1.1	57.87	03535	0.256	0.078	H.S.
Kshama	0.500	0.375	0.125	25.0	0.3535	0.125	> 0.9999	N.S.
Putimamsa-pidika	0.125	0.00	0.125	100.0	0.3535	0.125	> 0.9999	N.S.

Table 2. Showing pattern of Subjective Parameters improvement in Group B:

Subjective Parameters	**Mean**		**Diff.**	**Diff. %**	**S.D. (±)**	**S.E. (±)**	**'p' Value**	**Sig.**
	BT	**AT**						
Prabhuta-mutrata	2.1	0	2.1	100	1.3562	0.4794	0.0001	E.S.
Avila-mutrata	0.3	0	0.3	100	0.4629	0.1636	0.0313	Sig.
Kara padadaha	2.4	0.6	1.8	73.7	0.4629	0.1636	0.0002	E.S.
Kara padasuptata	1.6	0.8	0.9	53.8	0.3535	0.125	0.0005	E.S.
Udavarta	0.6	0.3	0.4	60.0	0.5175	0.1829	0.1250	N.S.
Hridgraha	0.9	0.3	0.6	71.4	0.7440	0.2630	0.0078	H.S.
Anidra	1.3	0.8	0.5	40.0	0.5345	0.1889	0.0078	H.S.
Daurbalya	2.1	0.9	1.3	58.8	0.4629	0.3519	0.0001	E.S.
Kshudha-adhikya	1.3	0.5	0.8	60.0	0.7071	0.25	0.0078	H.S.
Trishna	0.875	0.250	0.625	71.43	0.5175	0.1829	0.0078	H.S.

Avipaka	0.50	0.125	0.375	75.0	0.5175	0.1829	0.2500	N.S.
Vivandha	0.875	0.375	0.500	57.14	0.5345	0.1889	0.0313	Sig.
Sotha	0.375	0.125	0.250	66.67	0.4629	0.1636	0.1250	N.S.
Sandhi-shula	1.500	0.625	0.875	58.33	0.3535	0.125	0.0005	E.S.
Rukshata	1.250	0.625	0.625	50.0	0.5175	0.1829	0.0156	Sig.
Swasa	0.875	0.375	0.500	57.14	0.5345	0.1889	0.0313	Sig.
Kasa	0.250	0.000	0.250	100.0	0.4629	0.1636	0.0625	N.S.
Murccha	0.250	0.125	0.125	50.00	0.3535	0.125	> 0.9999	N.S.
Bhrama	0.500	0.250	0.250	50.00	0.4629	0.1636	0.0313	Sig.
Bibheti	1.375	0.625	0.750	54.55	0.4629	0.1636	0.0010	E.S.
Abhiksnamdhyayati	1.625	0.750	0.875	53.85	0.3535	0.125	0.0005	E.S.
Duschaya	1.875	1.250	0.625	33.33	0.5175	0.1829	0.0078	H.S.
Durmanah	1.625	0.750	0.875	53.85	0.3535	0.125	0.0010	E.S.
Kshama	1.250	0.875	0.375	30.0	0.5175	0.1829	0.0313	Sig.
Putimamsa-pidika	0.375	0.250	0.125	33.33	0.3535	0.125	> 0.9999	N.S.

Table 3. Showing pattern of Subjective Parameters improvement in Group C:

Subjective	**Mean**		**Diff.**	**Diff. %**	**S.D.**	**S.E.**	**'p' Value**	**Sig.**
Parameters	**BT**	**AT**			**(±)**	**(±)**		
Prabhuta-mutrata	1.8	0	1.8	100	0.8755	0.2768	0.0039	H.S.
Avila-mutrata	0.5	0	0.5	100	0.5163	0.1632	0.0313	Sig.
Kara padadaha	2.1	1	1.1	52.9	0.5676	0.1795	0.0039	H.S.
Kara padasuptata	1.5	0.5	1	66.7	0.3162	0.1	0.0039	H.S.
Udavarta	0.4	0.3	0.1	33.3	0.3162	0.1	> 0.9999	N.S.
Hridgraha	0.8	0.3	0.5	66.7	0.7071	0.2236	0.1250	N.S.
Anidra	0.6	0.4	0.3	40.0	0.4830	0.1527	0.2500	N.S.
Daurbalya	2.4	1	1.4	58.33	0.5163	0.1632	0.0020	H.S.
Kshudha-adhikya	1.1	0.4	0.8	66.7	0.6324	0.2	0.0156	Sig.
Trishna	0.750	0.125	0.625	83.33	0.6324	0.2	0.0156	Sig.
Avipaka	0.250	0.000	0.250	100.0	0.6324	0.2	> 0.9999	N.S.
Vivandha	0.875	0.375	0.500	57.14	0.5163	0.1632	0.1250	N.S.
Sotha	1.125	0.625	0.500	44.44	0.5270	0.1666	0.0625	N.S.

Sandhi-shula	1.750	0.875	0.875	50.00	0.4216	0.1333	0.0078	H.S.
Rukshata	1.875	1.250	0.625	33.33	0.5163	0.1632	0.0313	Sig.
Swasa	1.375	0.625	0.750	54.55	0.4216	0.1333	0.0078	H.S.
Kasa	0.125	0.000	0.125	100.0	0.4830	0.1527	0.2500	N.S.
Murccha	0.125	0.000	0.125	100.0	0.3162	0.1	> 0.9999	N.S.
Bhrama	0.750	0.250	0.500	66.67	0.5270	0.1666	0.0625	N.S.
Bibheti	1.250	0.500	0.750	60.00	0.4216	0.1333	0.0078	H.S.
Abhiksnamdhyayati	1.625	0.625	1.000	61.54	0.3162	0.1	0.0039	H.S.
Duschaya	2.000	1.625	0.375	18.75	0.5163	0.1632	0.1250	N.S.
Durmanah	1.750	1.000	0.750	42.86	0.4216	0.1333	0.0078	Sig.
Kshama	1.125	0.875	0.250	22.22	0.4830	0.1527	0.2500	N.S.
Putimamsa-pidika	0.000	0.000	0.000	-	0	0	-	- \

Table 4. Effect of therapy on Laboratory Parameters in Group A –

Lab. Test	**Mean**		**Diff**	**Diff. %**	**S.D.**	**S.E.**	**'t'**	**'p'**	**Sig.**
	BT	**AT**			**±**	**±**	**Value**	**Value**	
FBS	134.3	161.6	-27.3	-20.3	56.00	19.80	1.376	0.212	N.S.
PPBS	209.4	241.9	-32.5	-15.5	63.34	22.39	1.103	0.3064	N.S.
HbA_1C %	6.8	6.7	0.1	1.5	1.280	0.4524	.6199	0.8314	N.S.
ESR	20.5	20.1	0.4	1.8	10.77	3.808	0.0985	0.9243	N.S.
Urine Sugar	0.2	0.8	-0.6	-300.0	1.188	0.4199	1.488	0.1803	N.S.

Table 5. Effect of therapy on Laboratory Parameters in Group B –

Lab. Test	**Mean**		**Diff**	**Diff. %**	**S.D.**	**S.E.**	**'t'**	**'p'**	**Sig.**
	BT	**AT**			**±**	**±**	**Value**	**Value**	
FBS	136.00	129.13	6.88	5.06	45.10	12.05	0.8710	0.390	N.S.
PPBS	213.50	196.38	17.13	8.02	51.44	13.75	1.922	0.0768	N.S.
HbA_1C %	7.51	6.30	1.21	16.14	0.6294	0.1682	5.903	< 0.0001	Sig.
ESR	23.75	19.25	4.50	18.95	13.46	3.596	0.8342	0.4193	N.S.
Urine Sugar	0.25	0.00	0.25	100.00	0.4258	0.1138	1.883	0.0823	N.S.

Table 6. Effect of therapy on Laboratory Parameters in Group C –

Lab. Test	Mean		Diff	Diff. %	S.D.	S.E.	't'	'p'	Sig.
	BT	AT			±	±	Value	Value	
FBS	242.75	199.88	42.88	17.66	84.71	26.79	0.6421	0.530	N.S.
PPBS	338.13	280.00	58.13	17.19	136.7	43.23	0.6199	0.5567	N.S.
HbA_1C %	9.26	7.53	1.74	18.76	1.258	0.3979	4.298	0.0020	Sig.
ESR	30.25	23.38	6.88	22.73	15.31	4.843	0.6401	0.5381	N.S.
Urine Sugar	1.75	0.25	1.50	85.71	1.595	0.5044	2.181	0.0571	N.S.

Discussion-

Subjective Improvement

Group A - 88.2 % improvement in *Prabhuta-mutrata*, 100 % in *Avila-mutrata,* 76.9 % in*Kara padadaha,* 80 % in *Kara padasuptata,* 33.3 % in *Udavarta,* 83.3 % in *Hridgraha,* 44.4% in *Anidra,* 58.8 % in *Daurbalya,* 60 % in *Kshudha-adhikya,* 75 % in *Trishna,* 60 % in *Avipaka,* 14.28 % in *Vivandha,* 33.33 % in *Sotha,* 63.63 % in *Sandhi-shula,* 53.84 % in *Rukshata,* 71.42 % in *Swasa,* 100 % in *Kasa,* 100 % in *Murccha,* 83.33 % in *Bhrama,* 81.81 % in *Bibheti (timidity),* 36.36 % in *Abhiksnamdhyati),* 33.33 % in *Duschaya,* 57.87% in *Durmanah,* 25 % in *Kshama* and 100 % in *Putimamsa-pidika.*

The above result reveals that there is improvement in *Prabhuta-mutrata, Avila-mutrata, Kara padadaha, Kara padasuptata, Hridgraha, Sandhi-shula, Rukshata and Kasa.* The action of *Shilajeet as a Rasayan* can be assumed here. According to *Caraka* the means by which we can get perfect *Rasa* and *Dhatu* is called *Rasayan* and that type of effects definitely gives more stability to the affected *dhatus* and subsequent clinical work also shows the result.

Here in Group A the HbA1C level is 6.5 - 7, which we can say *Prameha* (Diabetis Mellitus) is under control. In chronic condition the symptoms become stable and it is little bit harder to bring to it's normal level.

Group B- 100 % improvement was found in *Prabhuta-mutrata*, 100 % in *Avila-mutrata,* 73.7 % in *Kara pada daha,* 53.8 % in *Kara padasuptata,* 60 % in *Udavarta,* 71.4 % in *Hridgraha,* 40 % in *Anidra,* 58.8 % in *Daurbalya,* 60 % in *Kshudha-adhikya,* 71.42 % in *Trishna,* 75 % in *Avipaka,* 57.14 % in *Vivandha,* 66.66 % in *Sotha,* 58.33 % in *Sandhi-shula,* 50 % in *Rukshata,* 57.14 % in *Swasa,* 100 % in *Kasa,* 100 % in *Murccha,* 50 % in *Bhrama,* 54.54 % in *Bibheti (timidity),* 53.84 % in *Abhiksnamdhyati,* 33.33 % in *Duschaya,* 33.33 % in *Durmanah,* 30 % in *Kshama* and 33.33 % in *Putimamsa-pidika.*

The above results shows that there is marked improvement in the symptomatic parameters in Group B than Group A. P value is extremely significant in *Prabhuta-mutrata*, *Kara padadaha, Kara padasuptata, Daurbalya, Sandhi-shula, Bibheti* (timidity), *Abhiksnamdhyati* and *Durmanah.* It seems that it is also due to the *Rasayana* properties of *Shilajeet.*

In Group B the HbA1C level is 7.1-8.5. Which we can say the acute condition of the disease. As in *Vatik Prameha Upadrava* there is excessive and immediate loss of *dhatus*, so application of *Rasayan* drugs at this stage showed effective result. *Acarya Caraka* also said from *Rasayana* we may achieve the proper and more stable *dhatus.*

Group C- 100 % improvement was found in *Prabhuta-mutrata*, 100 % in *Avila-mutrata,* 52.9 % in *Kara pada daha,* 66.7 % in *Kara padasuptata,* 33.3 % in *Udavarta,* 66.7 % in *Hridgraha,* 40 % in *Anidra,* 58.33 % in *Daurbalya,* 66.7 % in *Kshudha-adhikya,* 83.33 % in *Trishna,* 100 % in *Avipaka,* 57.14 % in *Vivandha,* 44.44 % in *Sotha,* 50 % in *Sandhi-shula,* 33.33 % in *Rukshata,* 54.54 % in *Swasa,* 100 % in *Kasa,* 100 % in *Murccha,* 66.66%

in *Bhrama,* 60% in *Bibheti (timidity),* 61.53 % *in Abhiksnamdhyati,* 18.75% in *Duschaya,* 42.85 % in *Durmanah* and 22.22 % in *Kshama.*

The above result reveals that the drug *Shilajeet* is able to enter the micro channel and perfectly breakdown the pathological process of *prameha. Prabhuta-mutrata and Avila-mutrata*have been reduced completely. There is improvement in other symptoms also. The HbA_1C level in Group C is > 8.5.It can be categorized under uncontrolled Diabetes.

Objective Improvement

Group A - 20.3 % increase in FBS, increase of PPBS is 15.5 %, 1.5 % relief in HbA_1C level, 1.8 % relief in ESR and Fasting urine sugar was increased up to 50 %.

Group B- 5.06 % decrease (relief) in FBS ,8.02 % relief in PPBS, 16.14 % improvement in HbA_1C level, 18.95 % relief in ESR and Fasting urine sugar was totally decreased (100 % relief).

Group C - 17.66 % relief in FBS, improvement in PPBS is 17.19 %, 18.76 % improvement in HbA_1C level, 73 % relief in ESR and Fasting urine sugar was decreased up to 85.71 %.

The result of the drug on objective parameters in Group A, Group B and Group C showed that there is no significant effect in laboratory parameters like FBS, PPBS and HbA_1c level in Group A. But in Group B and in Group C there is mild improvement in FBS, PPBS, HbA_1C level.The drug *Shilajeet* showed mild improvement in ESR.

So, the over all effect of the trial drug on Subjective and Objective parameters shows that there is marked improvement in subjective parameters (*Sthoolaupadrava*) than the lab parameters (*AnuUpadrava*). In case of Subjective parameters the *Rasayan* effect of *Shilajeet* has been proved. But in objective parameter *Shilajeet* showed mild improvement. Thus it is proved that the drug *Shilajeet* is more effective in gross physical impaired conditions (Symptoms) than the minute laboratory parameters. The *rasa* of *Shilajeet* is *katu-tikta-kashaya* and in disease profile *Kapha* the main *dosha* for *Prameha* thus it get subside naturally and on the other hand *rasas* of *Shilajeet* is also responsible for aggravation of *Vata dosha*, that may be one of the leading cause for the mixed effect of the therapy. So sometimes we can notice the increase in symptoms and at the same time other problems may get subsided.

Conclusion-

- *Vatikprameha upadrava* can be correlated with Diabetic Neuropathy.
- Over-weight subjects are more prone to develop complications.
- *Daurbalya* is the most common complication of *Prameha.*
- Effect of trial drug *Shilajeet* capsule on Subjective parameters shows marked improvement. In Laboratory parameters the result was not satisfactory.

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Clinical Study

A Study of The Role Of Etiological Factors Of Type 2 Diabetes

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Abstract

Diabetes is certain to be one of the most challenging health problems in the 21st century. This study was aim to identify the causative factors of Type 2 Diabetes. 120 Diabetic patients aged 20-80 were randomly selected for this survey study from NIA Hospital, Jaipur, irrespective of sex, religion & socio-economic factors etc. The result highlighted that males were the majority. All had excessively consumedfood prepared from flour, oil, *Kapha* promoting food and unctuous substances (100.00% each). Other causes found were excessive use of milk 86.67%, curd 85.00%, sweets 80.00%, products of jiggery 76.67%, ghee 61.67%, heavy substances 53.33%, products of sugarcane juice 36.67% and hot & sharp substances 30.00%. No exercise 83.33% and *Beeja Dosha* (family history) 53.33% were reported. Wrongful regimens, such as excessive sleeping at daytime 30.00% and idle sitting 28.33% were also found. Excessive usage of pungent & astringent substances 25.00% each, *Gramya, Audaka, Anoopa Mamsarasa* (soup of domestic, aquatic and marshy animals) 18.33%, comfortably sleeping 18.33% were observed. Other causes reported were excessive usage of cold andsalty substances13.33% each. Sour foodand sour taste 11.67% each, use of new cereals 8.33%, depression 6.67% and indulgence of alcohol 1.67%. Specific factors of *Kaphaja, Pittaja* and *Vataja Prameha* were also observed. The study revealed that several number of lifestyle factors are responsible for the development of Type 2 Diabetes. Changes in life style, dietary modification, physical exercise and stress relaxation candefinitely have an important role in the management of Diabetes.

Keywords: Diabetes, etiological factors, lifestyle

सारांश–

प्रमेह 21वीं सदी की एक चुनौती पूर्ण व्याधि है। इस शोध का उद्देश्य टाइप 2 डायबिटीज के निदानों की पहचान करना है। 20–40 वर्ष कि आयु के 120 प्रमेह के रोगियों को बिना किसी विशिष्ट क्रम से (लिङ्ग, धर्म एवं सामाजिक और आर्थिक स्थिति को ध्यान में न रख कर), राष्ट्रीय आयुर्वेद संस्थान जयपुर के हॉस्पिटल से चुना गया। शोध के परिणामों में पुरुष अधिक पाए गए। सभी रोगियों ने आटा, तेल, कफ वर्धक आहार एवं चिकनाई युक्त (प्रत्येक 100) पदार्थों का अत्यधिक सेवन किया था। अन्य निदानों में दूध का अत्यधिक प्रयोग 86.67 प्रतिशत, दही 85.00 प्रतिशत, मिष्ठान 80 प्रतिशत, गुड से बने पदार्थ 73.67 प्रतिशत, घी 61.67 प्रतिशत, गुरु पदार्थ 53.33 प्रतिशत, ईख रस 36.67 प्रतिशत एवं उष्ण एवं तीक्ष्ण पदार्थ 30.00 प्रतिशत पाए गए। अव्यायाम 83.33 प्रतिशत एवं बीज दोष 53.33 प्रतिशत देखे गए। विपरीत आहार विहार जैसे दिन में अधिक सोना 30.00 प्रतिशत एवं निष्क्रिय बैठना 28.33 प्रतिशत, अत्यधिक तिक्त एवं कषाय रस 25.00 प्रतिशत का सेवन देखे गए। निदानों में ग्राम्य, औदक आनूप मांस रस 18.33 प्रतिशत आरामदाय निद्रा 18.33 प्रतिशत पाया गया। अन्य निदानों में अत्यधिक शीत एवं लवण पदार्थों का सेवन प्रत्येक 13.33 प्रतिशत पाए गये। लवण पदार्थ एवं लवण रस 11.67 प्रतिशत, नव धान्य 8.33 प्रतिशत मानसिक अवसाद 6.67 प्रतिशत और मद्य सेवन 11.67 प्रतिशत है। निदानों में विशेष रुप से कफ, पित और वातज प्रमेह के निदान भी पाए गए। शोध में यह पाया गया कि जीवन शैली परिवर्तन के बहुत से कारण होते हैं। जीवन शैली में परिवर्तन, आहार में परिवर्तन, व्यायाम एवं मनो शान्ति का प्रमेह की चिकित्सा में महत्वपूर्ण योग दान हैं।

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Clinical Study

A Study of The Role Of Etiological Factors Of Type 2 Diabetes

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Introduction

Total 20 types of *Mehas* have been described in *Ayurveda*, [1].Among them, some *Mehas* are characterized with the *Madhura Rasa* (sweet taste) present in the urine[2]. All the *Mehas*, untreated in due course ultimately escort to *Madhumeha*[3]. Etiological factors, clinical features and complications of Diabetes mellitus and some *Mehas* are very analogous. The signs and symptoms closely bears similarity to the current day concept of Diabetes mellitus.

415 million people have Diabetes mellitus in the world and 78 million people in the SEA Region; by 2040 this will rise to 140 million.No country confirm a significant decrease in diabetes prevalence[4]. Half of world diabetic patients live in India, China, USA, Brazil and Indonesia.India is one of the 6 countries of the IDF SEA region and there were 69.1 million cases of diabetes in India in 2015 with 8.7 prevalence in adults. Prevalence rates are up to 20% in some cities, and recent figures haveshown surprisingly increased rates in rural areas[5].For India this increase is estimated to be 58%, from 51 million people in 2010 to 87 million in 2030[6].Estimation for undiagnosed cases of diabetes in adults was 36 million.

There are two types of diabetes. Type 1 diabetes (juvenile-onset diabetes) is usually caused by an auto-immune reaction where the defence system of the body attacks the cells that produce insulin. The reason for this is not fully discovered. People of any age may affect the disease, but frequently advances in children or young adults. Type 2 diabetesis named as non-insulin dependent diabetes (adult-onset diabetes) and accounts for 90% of all cases of diabetes. It is described by insulin resistance and relative insulin deficiency, either or both of which may be present. Type 2 diabetes may remain undetected for many years. It is often, associated with overweight or obesity[7]. Obesity is reaching epidemic proportions among India's middle-class children and adolescents, due topicking-up fast food over traditional cuisine. Physicians in India are fitting gastric bands on children as young as thirteen[8]**.** Increasing obesity in South-Asians is primarily driven by nutrition, lifestyle and demographic transitions, increasingly unwhole some diets and physical inactivity and genetic inclination[9]. A large amount of diabetes cases are preventable. Simple lifestyle measures have been shown to be effective in preventing or delaying the onset of type 2 diabetes. Maintaining normal body weight, engaging in regular physical activity, and eating a healthy diet can reduce the risk of diabetes[10].

Long-standing diabetes is commonly associated with chronic complications of retinopathy, nephropathy, neuropathy and accelerated atherosclerosis. It is not easily controlled and involves in long-term complications that result from chronic hyperglycemia. Some are life threatening, but all considerablydiminish the quality of life. It affects not only the patients, but also the rest of their family. Proper understanding of the causative factors of diabetes is timely needed to overcome this burning problem.

According to *Ayurveda* usually all three *Doshas* are involved in manifestation of the 20 types of *Prameha*[11]. *Prameha* is generally caused by the indulgence of the factors mainly vitiated the *Kapha Dosha;* ***"Sarvameheshvevatridoshahkaranam, adhikatvachashlishmikadivyapadeshaiti darshayati"***[12]. *Acharya Charak* has mentioned *Samanya Nidana* (general causes) of *Prameha* in *Chikitsa Sthana* 6/4. Vitiation of *Kapha Dosha* is obvious in this context. In *Vishesha Nidana* (specific causative factors) special attention has been taken to explain the causes of *Prameha* according to the predominant *Doshika* involvement.

Ayurveda has considered multiple factors responsible for the origin of the *Prameha*. According to *Ayurveda* both mind and body are the seats of diseases. Common Causes of *Prameha* can be categorized under *Aharaja Hetu* (dietary factors),

Viharaja Hetu (life style factors), *Manasika Hetu* (psychological factors) and *Sahaja Hetu* (hereditary factors) [13]. In the description of the *Nidana* of the *Prameha, Acharya Charak* and *Sushruta* follow a similar pattern. The causes vitiating mainly are *Kapha, Meda* and *Mootra.* All the *Nidanas* described in both *Brihatrayi* and *Laghutrayi* are given more stress to the *Apathya Nimitaja Prameha.* Hereditary factor (*Beejadosha*) also identified as a major determinant of the manifestation of *Sahaja Prameha*[14]. Psychological stressors such as performing unaccepted work by society, no proper mental congruent, anger, grief, worry, anxiety, stress, lack of mental exercise etc. are among the aetiology factors of the disease. Opinion of some expertise, that the females are not prone to diabetes is condemned by the commentary of *Gayadasa*[15]. As it was not accepted by all the disciplines of *Ayurveda* and not practically observed, many experts reluctant to admit this statement.

The disease is classified under *Vata, Pitta* and *Kapha* predominance, based on the vitiation of the three *Doshas* and leads to the manifestation of the different type of *Prameha*. *Charak* has also mentioned particular *Nidanas* responsible for the aggravation of specific *Dosha* and thereby specific '*Doshaja*' type of *Vataja, Pittaja* and *Kaphaja Prameha*. The knowledge of particular *Nidana* helps to diagnose the *Doshic* type as well as treatment and preventive aspects.

Specific features of *Nidana, Dosha* and *Dooshya,* determine the body immunity or susceptibility to the manifestation of diseases[16]. *Acharya Sushruta* says that a person who indulges constantly general causative factors such as day sleep, absence of physical activities, and laziness, consumes cold, unctuous sweet, fatty and liquid food and beverages etc. is susceptible for *Prameha*. The routine practice of *Nidana* mentioned for *Prameha,* vitiatethe qualities of *Kapha* in the body and get accumulated.

The *Ayurvedic* management of *Prameha* emphasizes dietary and lifestyle recommendations according to the psychosomatic constitution of the patient along with avoiding etiopathology. *Ayurveda* also address the management of psychological factors that contribute to the development of *Prameha*[17]. Life style that influenced *Apathyanimittaja Prameha* (adult onset diabetes) in *Ayurveda* are lack of exercise, over indulgence of sleep, sedentary habits, lack of cleanliness and suppression of natural urges. Current studies have confirmed that there is an increased risk of developing Type 2 diabetes from lack of exercise and sedentary life style. *Ayurveda* also has recognized the impact of emotional changes on diabetes. Identifying the related causative factors are very important to find the root cause of the diseases.

Aims & Objectives

The aim of this study was to identify the role of etiological factors in the onset of type 2 diabetes.In this study, both general and specific causative factors have been considered to understand the role of etiological factors of type 2 diabetes.

Methodology

The study was carried-out as a survey study. The literary material available in authentic *Ayurveda* texts, current research articles and other relevant facts from allied sciences have been compiled and proforma was prepared. One hundred and twenty patients already diagnosed as type 2 diabetes have been registered randomly. After obtaining the informed consent, they were selected within age group 20-70 years irrespective of sex, religion, occupation and socio economic states etc., from the Out Patient Department of the Hospital of National Institute of Ayurveda, Jaipur, India.

Result & Discussion

The result revealed that the majority was within 65-69 years age group (28.33%) followed by age group 45-49years (16.67%).13.33% each from 35-39 and 50-54 age groups. The study also included 10.00% of age group 55-59 years, 6.67% of 40-44 years age group and 5% of 60-64 age groups. The minimum, 1.67% was from age group 30-34 and aged 70 years each. Sex wise distribution has shown that the maximum number was males (65%).This study has indicated that uneducated females and educated males were comparatively more prone to the stress leading to diabetes. Religion wise classification indicated 81.67% Hindus and 18.33% Muslims. 96.67% was married. The maximum

number of the patients was graduates in this study (38%). The majority was house wives without any employment (30.00%) followed by businessmen (26.67%). Socio-economic status wise distribution has shown 66.67% having medium income and 33.33% having low income. Population of 73.33% was living in urban area followed by 23.33% from semi-urban area. When the leisure time was considered 46.67% had less than 8 hours rest daily. 33.33% was resting up to 8-12 hours where 20% had more than 12 hours rest. The majority was not doing any regular physical exercises (*Avyayama*) (83.33%) and only 13.33% was doing slight exercises. Not getting sufficient sleep (*Alpanidra)* was reordered from 50%. The time interval of the intake of food was irregular in the majority (61.67%). When the quantity of the food intake was considered, the maximum number of patients was taking an excessive quantity of food (*Ati Pramana*) (50%). Food pattern of 41.67% was *Viruddhashana* (incompatible food)followed by 31.67% *Vishamashana* (intake of food in irregular intervals*)* and 18.33% *Adhyashana* (over eating). The majority liked sweet taste (*Madhura Rasa*) (80%). 48.33% had medium body frame (*Madhyama Shareera Pramana*) but 40% was obese (*Sthoola*) and 11.67% was emaciated (*Krisha*).

(i) General Causative factors (*Samanya Nidana*)

When the *Nidana Sevana* (etiological factors) was considered, all the patients of this study had excessive *Pishtanna* (food prepared from flour of rice)*, Taila* (oil)*, Kaphavardhaka Ahara Vihara Sevana* (*Kapha* promoting regimens) and *Snigdha Dravya Sevana* (using unctuous substances) (100.00% each). Other causes found in descending order were excessive use of *Payah Sevana* (milk) 86.67%, *Dadhi Sevana* (curd) 85.00%, *Tyakta Vyayama/Avyayama* (no exercise) 83.33%, excessive usage of *Madhura Dravya* (sweet substances) 80.00%, *Guda Vikrita/Sharkara Sevana* (products of jaggery) 76.67%, *Grita* (ghee) 61.67% and *Guru Dravya Sevana* (heavy substances) 53.33%. *Beeja Dosha* (congenital defects) were traced from 53.33% and had strong positive family history of Diabetes. Excessive use of *Ikshuvikara* (products of sugarcane juice) 36.67% and *Ushna Teekshna Bhojanena* of (use of hot and sharp substances) 30.00% also reported. Wrongful regimens, such as excessive *Divasvapna* (sleeping day time) 30.00% and *Asya Sukham* (idle sitting) 28.33%were also found. *Katu Dravya Atiyoga* (excess intake of pungent substances) and *Katu, Kashaya Rasa Sevana* (excessive usage of pungent and astringent tastes) 25.00% each, *Gramya, Audaka, Anoopa Mamsa rasa Sevana* (soup of domestic, aquatic and marshy animals) 18.33%, *Svapnasukham* (comfortably sleeping) were observed from 18.33%. Other reasons reported were *Sheeta Dravya Sevana* (excessive usage of cold substances) and *Lavana Rasa Sevana* (excessive usage of salty substances) 13.33% each. *Amla Bhojana* (intake of sour food) and *Amla Rasa Sevana* (excessive usage of sour taste) 11.67% each*, Navanna Sevana* (excessive use of new cereals) 8.33%, *Vishada* (depression) 6.67% and indulgence of excessive *Sura* (alcohol) 1.67%.

(ii) Causative factors of each *Doshic* Type (*Vishesha Nidana*)

Kaphaja Prameha Nidana Sevana was observed as excess intake of *Pishtanna* (food prepared from flour of rice) and *Medovardhaka Vihara* (regimens increase fat) 100.00% each, Intake of *Payasa* (milk preparation) and *Ksheera* (milk) 96.67% each, *Svapnaprasanga* (indulgence in sleep) and *Vyayama Varjana* (avoid of exercises) 83.33% and *Shleshma, Meda, Mootravardhaka Ahara* (food which increase *Kapha,* fat and urine) 80.00%. Intake of *Ikshu Vikara* (preparations of sugarcane) 36.67%, intake of fresh *Harenu* (*Pisiumsativam* Linn) and *Shleshmavardhaka Vihara* (regimens which increase *Kapha*) 33.33% each, intake of fresh *Masha* (*Phaseolus radiates*) 30.00%, *Asanaprasanga* (indulgence of sedentary habits) 28.33% and intake of *Gramya, Anoopa, Audaka Mamsa rasa* (soup of domestic, aquatic and marshy animals) 26.67%. *Shaiyaprasanga* (indulgence of bed rest) 18.33% and *Mrija Varjana* (avoid of cleanliness) 5.00% were also found from the studied population.

Pittaja Prameha Nidana Sevana have identified from the patients included *Krodha* (anger) 76.67%, *Vishama Ahara sevana* (intake of incompatible food) 41.67%, *Shrama* (excessive physical excretion) 40.00%, *Katu Bhojana* (intake of pungent food) 25.00%, *Ushna Bhojana* (intake of freshly prepared hot food) 23.33% as the highest frequency. *Ajeerna Bhojana* (intake of food before

digestion of the previous meal) 18.33%, *Lavana Bhojana* (intake of saline food) 13.33%, *Ati Teekshna Atapa* (exposure to excessive hot sun) 3.33% and *Ati Teekshna Agni Santapa* (exposure to excessive heat of the fire) 1.67%, were also reported.

Vataja Prameha Nidana Sevana reported were *Vega Sandharana* (bearing manifested urges) and *Udvega* (stress /anxiety) 100.00% each, *SHoka* (grief) 60.00%, *Jagarana* (keeping awake in night) 50.00%, *Vyayama Atiyoga* (excessive indulgence in physical exercise) 40.00%, *Sheeta Dravya Atiyoga* (excess intake of cold substances) 20.00%, *Rooksha Dravya Atiyoga* (excess intake of rough substances) and *Anashana* (fasting) 13.33%, *Laghu Dravya Atiyoga* (excess intake of light substances), 10.00% *Abhighata* (assault) 3.33% and *Atapa* (exposure to sun) 3.33%.

Conclusion

The prevalence of Diabetes mellitus is increasing around the world progressively. *Prameha* is generally caused by the indulgence of the factors mainly vitiate the *Kapha Dosha*. Important reasons of diabetes can be traced from the general causative factors of *Prameha* as well as *Vataja, Pittaja* and *Kaphaja Pramehas*. In this study males (65%) were more prone to Diabetes mellitus but a considerable percentage of females (35%) were also suffering from the disease. The education level has found to be having direct impact on diabetes. Sedentary lifestyle including less work and more leisure, devoid any regular physical exercises (*Avyayama*) has precipitated diabetes. In other hand excessive hours of work, rest less than 8 hours, overburden work and disturbance of sleep (*Alpanidra*) also has directed to diabetes. Irregular interval of the intake of food (*AharaKala)*, intake of excessive quantity of food (*Atipramana Ahara*), food pattern (*Ahara Vidhi*) such as *Viruddhashana*, *Vishamashana, Adhyashana* and excessive intake of *Madhura Rasa* has caused the excessive accumulation of *Kapha* leading to *Samprapti* of *Prameha*.

Consume excessive *Pishtanna, Taila, Kaphavardhaka Ahara Vihara*, *Snigdha Dravya Sevana*, *Payah Sevana*, *Dadhi Sevana, Madhura Dravya Sevana, Tyakta Vyayama/Avyayama*, *Guda Vikrita/Sharkara, Grita* and *Guru Dravya Sevana* were the noticeable causative factors found in this study. *Beeja Dosha* (positive family history) were traced from the majority. *Shaiyaprasanga* (indulgence of bed rest*)* and *Mrija Varjana* (avoid of cleanliness) found from the studied population presented the vitiating *Kapha Dosha* leading to diabetes. *Pittaja Prameha Nidana Sevana* has identified mainly as *Krodha* (anger) and *Vataja Prameha Nidana Sevana* has shown *Vega Sandharana* (bearing manifested urges) and *Udvega* (stress/anxiety), *Shoka* (grief), *Jagarana* (keeping awake in night) and *Manasika Abhighata* (mental trauma).These causes indicate the psychosomatic relationship. Most of the *Nidana* observed in the studied population were also tally with the description of the classical texts about *Prameha*.

The study revealed that several number of lifestyle factors are responsible for the development of Type 2 diabetes. For the prevention of the occurrence of a disease different etiological factors should be avoided. These causative factors are also to be omitted while treating the particular disease even after its manifestation. Changes in life style, dietary modification, physical exercise and stress relaxation can definitely have an important role in the management of Diabetes.

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Clinical Study

Management of Complications of *Madhumeha* (Diabetes Mellitus) W.S.R. To Alzheimer's Disease

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Abstract-

Diabetes mellitus is an emerging global epidemic that affects millions of people worldwide. This systemic disease affects the blood sugar level causing far-reaching consequences for the human body. Diabetes affects the blood vessels and nerves of the body and causes long-term complications. During the early stages of disease, the damage caused by the high blood sugar level is not very obvious but after several years of poorly controlled diabetes, every organ of the body starts to show the signs and symptoms of disease-related deterioration. Most of the complications of diabetes are well-known. They include coronary artery disease (damage to the heart), diabetic neuropathy (damage to the nerves resulting in pain or loss of sensation in the legs and hands, as well as formation of skin ulcers), diabetic retinopathy (damage to the eyes) and diabetic nephropathy (damage to the kidneys). Another serious complication of diabetes is Alzheimer's disease. Recent studies propose a common pathophysiology between diabetes and Alzheimer's disease. The similarities in the pathophysiology have given way to the thought that Alzheimer's disease could be viewed as a new form of diabetes mellitus. *Ayurveda* uses the inherent power of natural herbs to bring about wonderful results on the human body. The herbs are natural and 100% safe. These herbs help improve memory and brain power. The *Ayurvedic* herbs *Brahmi*, *Ashwagandha*, *Curcumin*, etc help improve Alzheimer's situation.

In this presentation I would like to present management of complication of diabetes such as Alzheimer's disease.

Key Words - Diabetes mellitus, *Madhumeha*, Alzheimer's disease

सारांश-

मधुमेह एक उभरती वैश्विक महामारी है जो कि दुनिया भर में लाखों लोगों को प्रभावित करती है। यह सांस्थानिक रोग रक्त शर्करा के स्तर को प्रभावित करता है, जिससे मानव स्वास्थ्य के लिए बहुत अधिक दूरगामी परिणाम होते है। मधुमेह शरीर की रक्त वाहिकाओं और तन्त्रिकाओं को प्रभावित करता है, और दीर्घकालिक जटिलताओं का कारण बनता है। बीमारी के प्रारंभिक चरण के दौरान, उच्च रक्त शर्करा के प्रत्येक अङ्ग में रोग-संबधित गिरावट के लक्षणों के रूप में दिखना शुरु हो जाता है। मधुमेह के अधिकांश उपद्रव भली-भाँति ज्ञात है जिनमें से कुछ निम्न है, कोरोनरी धमनी रोग (हृदय को क्षति), डाइबिटिग न्यूरोपैथी (तन्त्रिकाओं को क्षति पहुँचने के परिणामस्वरूप पैरों और हाथों में दर्द या सनसनी) साथ ही त्वक् व्रण का गठन), डाइबिटिक रेटिनोपैथी (मधुमेहज दृष्टिपटल विकृति) और डाइबिटिक नेफ्रोपैथी (मधुमेहज वृक्क विकृति)। मधुमेह की एक और गंभीर जटिलता है अल्जाइमर रोग। वर्तमान अध्ययन के अनुसार मधुमेह और अल्जाइमर (स्मृति लोप) रोग के मध्य की रोग-शरीर क्रिया में समानता है। रोग-शरीर क्रिया में समानता होने की वजह से अल्जाइमर रोग को मधुमेह का एक नया रूप माना जा सकता है। आयुर्वेद मानव शरीर पर अद्‌भुत परिणाम लाने के लिए प्राकृतिक औषधियों की अन्तर्निहित शक्ति का उपयोग करता है औषधियाँ प्राकृतिक और शत प्रतिशत सुरक्षित है, ये औषधियाँ स्मृति और मस्तिष्क की शक्ति को बेहतर बनाने में मदद करती है। ये आयुर्वेदिक औषधियाँ ब्राह्मी, अश्वगंधा, कुरकुमिन आदि अलजाइमर की स्थिति को सुधारने में मदद करती है। इस प्रस्तुत शोध में मधुमेह के उपद्रव (डाइबिटिक अल्जाइमर) रोग का चिकित्सकीय प्रबन्धन प्रस्तुत करने का प्रयास किया गया है।

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Clinical Study

Management Of Complications Of *Madhumeha* (Diabetes Mellitus) W.S.R. To Alzheimer's Disease

Dr. Rahul Kumar Sanwariya, Dr. Pramod Kumar Mishra

Introduction

Ayurveda is the science of life. This holistic ancient science has two objects, viz. to maintain the health of healthy person, and to treat the sick person. The entire *Ayurveda* is frame on *Trisutras* - *Hetu, Linga, Ausadha* (3 principles- etiology, symptomatology and medicament). *Ausadha* is the most important among them. Plants, animals and minerals, these three are the main sources of *Ayurvedic* drugs.

Type 2 diabetes mellitus (T2DM) and Alzheimer's disease (AD) are both more prevalent with ageing, but it has generally been assumed that this is coincidental, not a reflection of co-morbidity. However, evidence suggests that patients with T2DM are at an increased risk of getting AD and that hyperinsulinaemia and insulin resistance – hallmarks of T2DM [1-3] can lead to memory impairment. Animal models of T2DM have reduced insulin transport to the brain, reduced insulin uptake and reduced neuronal insulin,[4-6] consistent with reported reduced insulin levels, insulin receptor expression and insulin resistance in brains of AD patients.[7-9]

DM2 is one of the fastest growing epidemics at present, which is frequently associated with aging. Characteristic features of DM2 include impairments in insulin actions and signaling. Insulin resistance in peripheral tissues results in hyperglycemia and hyperinsulinemia. AD is the most common neurodegenerative disorder, and its incidence increases with age[10]. AD is characterized by the presence of several pathological hallmarks including neuronal loss, formation of senile plaques composed by extracellular deposits of amyloid beta, intracellular neurofibrillary tangles composed of aggregated hyperphosphorylated tau proteins in brain, proliferation of astrocytes, and activation of microglia. These features are accompanied by mitochondrial dysfunction and alterations in neuronal synapses[10]. The molecular and pathophysiological mechanisms that underlie AD still have many dark sides. Although etiology and the exact mechanism that trigger the pathological alterations of AD are still not clear, most studies have suggested that the deposit of the toxic amyloid-beta peptide caused by an abnormal processing of amyloid-beta precursor protein (amyloid cascade hypothesis), may initiate and/or contribute to the pathogenesis of AD.

Epidemiology

Mounting epidemiological and biological evidences support a link between these two aging related diseases. First and foremost, diabetes mellitus is associated with changes in cognition, and cognitive dysfunction.

Persons with diabetes have been reported to hold a higher incidence of cognitive decline and AD; DM2 has been strongly associated with an increased risk of developing all types of dementia, including AD.[11,12-14].

In a community-based controlled study (Mayo Clinic Alzheimer Disease Patient Registry) the prevalence of diabetes and glucose intolerance was examined in patients with AD *vs* control participants without AD. The study suggested that frank diabetes (35%) or glucose intolerance (46%) might be present in up to 80% of patients with AD[15].

Most recent studies have focused on the possible role of insulin, and insulin action. Insulin resistance has been strongly implicated as a possible link between DM2 and AD. A condition of hyperinsulinemia, regardless of the presence of DM2, appears to be associated with a worse cognitive performance. There is a rapid growth in the literature pointing toward insulin deficiency and insulin resistance as mediators of AD-type neurodegeneration. De la Monte has even suggested that AD may be termed as "type 3 diabetes",

indicating that AD may represent a form of diabetes that selectively involves the brain with molecular and biochemical features that overlap with diabetes mellitus[16].

Pathophysiology

Most recent studies have focused on the possible role of insulin, and insulin action. Insulin resistance has been strongly implicated as a possible link between DM2 and AD. A condition of hyperinsulinemia, regardless of the presence of DM2, appears to be associated with a worse cognitive performance. There is a rapid growth in the literature pointing toward insulin deficiency and insulin resistance as mediators of AD-type neurodegeneration. De la Monte has even suggested that AD may be termed as "type 3 diabetes", indicating that AD may represent a form of diabetes that selectively involves the brain with molecular and biochemical features that overlap with diabetes mellitus[16].

The importance of the role of insulin in brain aging has long been known. Insulin has significant neurothrophic properties in the brain. The hormone is rapidly transported to the level of the central nervous system through the blood-brain barrier by a transport mechanism mediated by insulin receptors. It is interesting to note that these receptors are mainly localized at the level of the hippocampus, entorhinal cortex and frontal areas known to be involved in functions such as memory and learning. Insulin is also involved in the production of important neurotransmitters such as acetylcholine and norepinephrine. It is known that an acute increase in circulating levels of insulin, as it occurs in the post-prandial period, determines a physiological parallel increase of the concentrations of the hormone in the brain. A state of chronic hyperinsulinemia, as it occurs in insulin-resistance conditions and in DM2 may determine a down-regulation of the insulin receptors at the blood-brain barrier, thus reducing the transport of insulin in the brain. Evidence is growing to link an alteration of metabolism and the deposition of precursors of amyloid in the brain that may occur in persons with diabetes, which is suggested as the pathogenesis of AD in DM2. The amyloid precursor protein is a transmembrane protein consisting of 770 amino acids; it is known to be the precursor of the amyloid beta involved in the etiopathogenesis of AD. Although the role of amyloid beta and its isoforms has yet to be elucidated, it seems to take part in numerous physiological processes.

Although there is still limited knowledge concerning the association between impaired fasting glucose and/or impaired glucose tolerance and cognitive impairment, there is increasing evidence that these prediabetic conditions may increase the risk of AD in elderly patients. The risk of incident dementia increased in diabetic and in non-diabetic persons according to the average glucose concentrations during the preceding 5 years.[17] Hyperglycemia and hyperinsulinemia may accelerate brain aging also by inducing *tau* hyper-phosphorylation and amyloid oligomerization, as well as by leading to widespread brain microangiopathy. Persons with diabetes are more prone to develop accelerated leukoaraiosis (white matter high-intensity lesions)[18].

Symptoms

Alzheimer's may present a wide range of symptoms in different people depending on the part of brain affected. They may be more on the emotional and memory scale or in some they may majorly affect the body functioning. Some of the common symptoms in the early stage are

- Excessive emotional behavior
- Difficulty in language
- Loss of memory
- Difficulty in perception
- Loss of thinking and judgment
- Difficulty in performing more than one task at a time
- Time taken to perform activities is longer.

Symptoms That Appear After Some Time Gap

- The person forgets familiar routes
- Problems with language, even familiar names
- Misplacing items
- Changes in personality changes

- Sleep pattern changes even waking up at night

Symptoms In The Later Stages

- Depressed moods and delusions
- Even the daily tasks become a problem like preparing meals, choosing proper clothing, and driving
- Facing difficulty in reading or writing
- Forgetting current events
- Forgetting your own self
- Poor judgment and loss of ability to recognize danger

Management

Alzheimer's disease is life-changing for both the diagnosed individual and those close to him or her. While there is currently no cure, treatments are available that may help relieve some symptoms. A wise *Ayurveda* physician must have specific logic about where to start and how toprogress the treatment while treating AD. We cannot say 'completion of treatment' as this may be considered as a *Yapyaroga*. *Ayurved* can provide a better relief if diagnosed and treated in the early stages of AD.

The first stage of treatment involves *Rookshana* and intake of *Amapachana* medicines. *Udwartana, Dhanyamldhara* and intake of medicines like *Shadangam*.

Kashaya, Saddharanam Churna may be useful. We do *Rookshana* and *Amapachana* to make the *Srotas* ready for *Snehana* and *Shodhana* procedure. In most patients wecan see that there is some relief by these processes itself as the *Srotas* may become slightly conducive to circulations. We can remember here *Langhana* (lightening therapy) is advised even before going for *Brihana* (nourishing)[19]. Properly administered *Langhana* itself bring about the clarity of senses, expulsion of wastes and lightness in body[20]. But one must never overdo the process as it may very much aggravate the *Vatadosha*. Then we must selectively do *Snehana*. If the progression is not rapid it must be predominantly *Vatikam*. In *Vatika* we can introduce Taila both internally and externally. Especially in *Pranaavruta Samana*, *Chatushprakara snehana* (four types of unctuous substances that is Ghee, oil, fat and bonemarrow) is being indicated. Medicines which are *Brimhana* (nourishingh) and *Vatanulomana* (downward movement of *Vata*) shouldbe selected like *Kshirabala, Vatasini, Dhanwantaram, Narayana*, or *Lakshaditaila*. *Murdhatailam* with *Balalakshadi, Kshirabala* or *Vatasini* can be also done for *Snehana*. After proper *Snehana* (oilation), *Swedana* (Sudation), *Shodhana* should be done in the form of *Vasti* or *Virechana*, while the latter is found to be more effective in *Pittanubandha* condition. *Vasti* is said to be the best in *Vata Vyadhi*, moreover it is said to be *Ardhachikitsa*[21]. *Yapanavastis* are indicated in *Avarana* and also in *Manovikara* (psychological disturbances)[22] and we can select *Rajayapanavasti* for the treatment of AD.

Herbs In *Ayurveda* That Help Alzheimer's

Bacopa Monnieri (*Brahmi*)

The *Brahmi* herb is famous for its magnificent properties. It is a wonderful tranquilizer. It increases the brain functioning. A few of its astonishing effects have been proved on conditions like Parkinson's and Alzheimer's. It is used by physicians for stress, post-natal depression, anxiety, ADD and epilepsy. Owing to its vast sphere of actions, it is a major constituent of a variety of products like health tonics, memory tonics, etc. Stress, anxiety, menstrual disturbances, hair loss and fatigue are a few conditions where the herb has shown positive effects. Another wonderful action of the herb is on the nervous system wherein it works to increase the coordination between the nervous system components thereby increasing the brain functioning. It is therefore used as a brain tonic. For its action on controlling the anxiety of the nervous system the Ayurvedic herb is used as a tranquilizer.

The actions of the *Brahmi* herb over the brain area make it a wonderful tonic to help enhance the mental capabilities of the individual. It affects both the short and the long-term memory. It promotes a relaxed state of mind and nerves, spreading calmness. It takes care of the tension caused headaches, feeling of anxiety and depression. The herbal product is highly recommended for people suffering from ADD as it helps them analyze clearly. *Brahmi* is used in *Brahmi* capsules,

Medhyachurna, and memory support capsules.

Acorus Calamus (*Vacha*)

The root of this herb is used to relieve a number of nerve related disorders and increase speech coordination, speech ability. It helps to increase memory power and coordination.

Convolvuluv Pluricaulis (*Shankhpushpi*)

This plant bears beautiful white flowers. It helps the mind to recollect and remember things in an effective way. It is useful in relieving stress, improves mind ability and controls blood pressure. In India it has been given to children to increase their memory especially during exams. Memory support capsules contain this herb.

Licorice (Glycerrhiza Glabra)

This herb is one of the best anti-depressants and anti-ulcer herbs. Regular use of this herb enhances strength, improves eye sight, prevents cold and cough and relieves gastric ulcers.

Curcumin Longa (Turmeric)

Anti-oxidants present in the herb reduce the free-radicals from the body thereby improving the health and immunity. Curcumin herb has rich anti-diabetic properties that make it a wonderful herb to use for diabetic patients. It is a famous Chinese medicine to relieve digestive and liver related diseases. Its anti- inflammatory properties make it a strong herb for various allergies, infections and inflammations. The herb has the power to fight against toxins and infections owing to its rich anti-biotic properties.

Withania Somnifera (*Ashwagandha*)

The ancient *Ayurvedic* herb *Ashwagandha* is a multiple benefit herb. It has beneficial effects on human body in a natural way. *Ashwagandha* helps in cases stress, memory loss and many more chronic ailments. A look at these disorders tells us that they are all related to our life style. The increase in stress and manifold decrease in a healthy diet and lifestyle leads to stress induced disorders including many neurological disorders. People usually complain of stress, fatigue, memory and bodily weakness

Zingiber Officinale (*Sonth*)

Zingiber works wonderfully on the nervous and emotional ailments. The results are on the overall body system. The appetite is boosted, the brain functioning becomes sharper, and the memory becomes stronger. It acts well for weakness of body and mind, stresses of daily life, and improper brain functioning. It also has multiple effects on other organs.

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Clinical Study

Clinical Evaluation of *Darvadi Ghrita* And *Shilajatu* In *Vataja* Complication of *Prameha*

*Dr. Nur Mohammad Iqbal Chowdhury ** Prof. Ram Kishor Joshi

Abstract-

Purpose: The present study has been undertaken to evaluate the efficacy of *darvadi ghrita* (*charaka samhita*) and *shilajatu* in *vataja* complications of *prameha*. **Method:** The principle was taken from the *charaka samhita*. The compendium has instructed to prepare *sneha kalpana* of mentioned decoctions in *vatavriddhi* condition of *pittaja* and *kaphaja meha*. A *ghrita kalpana* i.e. *darvadi ghrita* was prepared out of *kasaya yoga* (ca. chi 6/26) and *shilajatu* were given to the patients having *vataja* complications (ast. hr. chi). **Design Of Study:** A Single blind clinical study with pre-test and post-test design. **Settings**: National Institute of Ayurveda, Jaipur, Rajasthan, India. **Study Selection:** 20 diagnosed patients of *prameha with vataja upadrava* of either sex were randomly selected. **Result:** Among the criteria selected for the evaluation like *udavarta, kampa, sula, anidra, kasa, svasahridagraha* etc. all were statically analyzed with the help of paired t test and the outcome was statically significant. **Conclusion:** The *darvadi ghrita* and *shilajatu* administered internally gives better results in the management of *vataja complication of prameha*.

Keywords: *vataja meha,* complication*, darvadi ghrita, shilajatu.*

सारांश

उद्देश्यः प्रस्तुत वर्तमान अध्ययन वातज व्यापदों में दार्वादि घृत (चरकसंहिता) एवं शिलाजतु की प्रभावोत्पादकता के मूल्यांकन हेतु किया गया। **विधिः** यहाँ महर्षि चरक के सिद्धान्तों को लिया गया। जिसमें पित्तज व कफज प्रमेह की वात वृद्ध अवस्था में वर्णित क्वाथ की स्नेह कल्पना तैयार करने का निर्देश दिया गया। दार्वादि घृत, जो कि एक घृत कल्पना है, को च.चि. में वर्णित कषाय योग से तैयार किया गया तथा शिलाजतु को वातज व्यापदो के रोगियों को दिया गया। (अ.ह्.चि.)

अध्ययन का प्रारूपः यह एक एकल अन्धता का नैदानिक अध्ययन है जिसमे अनुसन्धान के पूर्व व पश्चात परीक्षण किया गया। **समायोजनः** राष्ट्रीय आयुर्वेद संस्थान, जयपुर, अध्ययन का चयन प्रवरणः अध्ययन के लिए प्रमेह निदान रोगियों (पुरूष या स्त्री) को वातज व्यापदों के साथ यादृच्छिकता से चुना गया। **परिणामः** मूल्यांकन के लिए चुने गये मापदण्डों/मानकों जैसे उदावर्त, कम्प, शूल, अनिद्रा, कास, श्वास, ह्रद्ग्रह इत्यादि का – के माध्यम से सांख्यिकीय विश्लेषण किया गया। जिसमे परिणाम सांख्यिकीय रूप से महत्वपूर्ण आए। **निष्कर्षः** अंततः यह कहा जा सकता है कि दार्वादि घृत एवं शिलाजतु आभ्यान्तर प्रयोग से वातज व्यापदों के प्रबन्धन में बेहतर परिणाम देते हैं।

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Clinical Study

Clinical Evaluation of *Darvadi Ghrita* And *Shilajatu* In *Vataja* Complication of *Prameha*

Dr. Nur Mohammad Iqbal Chowdhury, Prof. Ram Kishor Joshi

Introduction

The word *'prameha'* consist of two sub-words. i.e. *'pra'* and *'meha'*. The word *meha* is derived from the root "mih secane by adding *'liue' pratyaya* to it "*mehati, sinchati mutraretansi*" which means to excrete (*halayudhakosha*). *Rigveda* mentioned this word first is *mehanadthanam karanallium*. The commentator of *Rigveda, Shayanacharya* interpreted the word *mehana* as *medhra*, which denotes to *shishna* (penis). In sanskrit literature the *'mih'* is used to denote, to make water, to wet, to emit semen in reference to disease of human body, so this root *'mih'* is added to prefix *'pra'* which mean the passing of urine in excess by in both term quantity and frequency and it becomes *'prameha'*.

Types

- *Prameha* are 20 in number[1]
- *Prameha* can be classified under following headings:

1) According to *dosha*

- *Kaphaja*[2]
- *Pittaja*[3]
- *Vataja*[4]

2) According to prognosis

- *Sadhya (Kaphaja)*
- *Yapya (Pittaja)*
- *Asadhya (Vataja)*

3) According to body constitution

- *Sthula* and
- *Krisha*

4) According to *nidana*

- *Sahaja* and *apathyanimittaja*
- *Prakriti prabhava* and *swakrit*

5) According to *dosha* predominance

- *Shleshmasamudbhava*
- *Doshakshayajanya Vataprakopatah*.

Features of *Vataja Prameha*[5]

1. *Vasa meha*: In *vasa meha*, the person passes the urine repeatedly which is mixed with fatty oil and often appears turbid and sticky similar to fat.

2. *Majja meha*: Here, urine will have the appearance similar to marrow and it is excreted frequently.

3. *Hasti meha*: In this condition of *hastimeha*, urine is often excreted like an intoxicated elephant (*mattahastiriva ajasrammutra*) without force. In few of the cases lymph with clots are also found.

4 *Madhu meha*: *Acharya Caraka* explained that the roughness of aggravated *vata dosha* transforms the sweet taste (of *ojas*) into astringent taste and expels out along the urine, hence causes *madhumeha*. Urine with astringent mixed sweet taste, pale color and unctuousness are the features of this condition. *Acharya Vagbhata* opines that all *prameha* if neglected or not treated properly, ultimately they reach the terminal stage – *madhumeha*.

***Samprapthighatakas*:[6] (favorable things for disease)**

●	*Dosha* (humur)	–	*vata, pitta, kapha*
●	*Dushya*	–	*meda, mamsa, kleda, rakta, vasa, majja, lasika, rasa and ojas*
●	*Srotas* (channel)	–	*mootravaha*
●	*Srotodusti*	–	*atipravrutti*
●	*Agni*	–	*dhatvagni*
●	*Udhbhavasthana*	–	*kostha*
●	*Vyaktasthana*	–	*mootravaha srotas* (urinary tract)

Stages Of *Prameha*

क्षीणेषु दोषेष्ववकृष्य बस्तौ धातून् प्रमेहाननिलः करोति ।
दोषो हि बस्तिं समुपेत्य मूत्रं सन्दूष्य मेहाञ्जनयेद्यथास्वम् ॥

Ca. Chi. 6/6

If *kaphaja prameha* and *pittaja prameha* is untreated then it will be converted to *vataja prameha*. Before *vataja prameha* there is a stage that is *vata vriddhi avastha* of *kaphaja* or *pittaja prameha*.

Chikitsa Sutra

स्थूलः प्रमेही बलवानिहैकः कृशस्तथैकः परिदुर्बलश्च।
सम्बृंहणं तत्र कृशस्य कार्यं संशोधनं दोषबलाधिकस्य।।

ch.chi.6/15

स्निग्धस्य योगा विविधाः प्रयोज्याःकल्पोपदिष्टा मलशोधनाय।
ऊर्ध्वं तथा! धश्च मले! पनीते मेहेषु सन्तर्पणमेव कार्यम्।

ch.chi.6/16

सिद्धानि तैलानि घृतानि चैव देयानि मेहेष्वनिलात्मकेषु ।
मेदः कफश्चैव कषाययोगैः स्नेहैश्च वायुः शममेति तेषाम्।।

ch.chi.6/34

Purpose Of Treatment

— Moto of treatment of *madhumeha* (diabetes) is to prevent the dreadful complications i.e. to prevent the *asadhya avastha* and to make it reversible.

— In other words *prameha* should be treated in *kaphaja* and *pittaja avastha* and should not allow the stage of *vata vriddhi avastha* for long course.

— To prevent the onward propagation of pathogenesis of *vataja prameha*.

— *Acharaya Caraka* says, *vataja prameha* cannot be cured and so we have to prevent it before it turn into *vataja prameha*.

या वातमेहान् प्रति पूर्वमुक्ता वातोल्बणानां विहिता क्रिया सा
वायुर्हि मेहेष्वतिकर्शितानां कुप्यत्यसाध्यान् प्रति नास्ति चिन्ता

Ca. Chi. 6/52

— So, treatment modality should be to neutralize the *vata* and use of *rasayana*.

— That's why; I have taken a *vata prasamana* drug like *darvadya ghrita* and *shilajatu rasayana*.

Study Design

— Randomized

— Single centre

— Interventional

— Pre test – Post test study

Drug Administration

40 patients were randomly divided into two groups with 60 days duration of trial. Follow up – 30 days.

Group-1: 20 Patients, Darvyadi ghritam: 10 ml BD.

दार्वीं सुराह्वां त्रिफलां समुस्तां कषायमुत्क्वाथ्य पिबेत् प्रमेही|
(*Ca. Chi. 6/26)*

सिद्धानि तैलानि घृतानि चैव देयानि मेहेष्वनिलात्मकेषु |
(*Ca. Chi. 6/34)*

Group-2: 20 Patients, Shilajatu: 500 mg BD with luke warm milk for 2 months.

Assessment Criteria

— *Vataja prameha updrava*

हृद्ग्रहो लौल्यमनिद्रा स्तम्भः कम्पः शूलं बद्धपुरीषत्वं चेति वातजानाम् | (Su. Ni. 6/15)

1. *Hridgreha*
2. *Lolya*
3. *Anidra*
4. *Stambha*
5. *Kampa*
6. *Shula*
7. *Buddha pushishata*
8. *Daurbalya*
9. *Kriyahani*
10. *Kriyahani*
11. *Svapa*

— *Vatavriddhi lakshana*

— *Dhatukshaya-janya lakshana*

— Investigations – CBC, FBS, PPBS, HbA1c

Symptomatic Improvement after Therapy (Group 1)

Sr. No.	Variable	Mean B.T.	Mean A.T.	Mean Dif.	Mean %	S.D.	S.E.	t	P	Result
1.	*Hridgreha*	1.2	0.8	0.4	33.33	0.52	0.16	2.45	< 0.05	S.
2.	*Lolya*	1.9	1.5	0.4	21.1	2.22	0.7	0.57	> 0.05	N.S.
3.	*Anidra*	0.9	0.7	0.2	22.2	0.79	0.25	0.8	> 0.05	N.S.
4.	*Stambha*	1.1	0.8	0.3	27.3	0.48	0.15	1.96	> 0.05	N.S.
5.	*Kampa*	2.1	1.2	0.9	42.9	0.99	0.31	2.86	< 0.01	S.
6	*Shula*	1.2	0.9	0.3	25	0.67	0.21	1.41	> 0.05	N.S.
7	*Baddha pushishata*	1.3	0.8	0.5	38.5	0.53	0.17	3	< 0.01	S.
8	*Daurbalya*	1	0.6	0.4	40	0.52	0.16	2.45	<0.05	S.
9	*Kriyahani*	0.9	0.8	0.1	11.1	0.32	0.1	1	> 0.05	N.S.
10	*Svapa*	0.8	0.5	0.3	37.5	0.48	0.15	1.96	> 0.05	N.S.

Symptomatic Improvement after Therapy (Group 2)

Sr. No.	Variable	Mean B.T.	Mean A.T.	Mean Dif.	Mean %	S.D.	S.E.	t	P	Result
1.	*Hridgreha*	1.2	0.8	0.4	33.3	0.52	0.16	2.45	<0.05	S.
2.	*Lolya*	0.9	0.5	0.4	44.4	1.17	0.37	1.08	> 0.05	N.S.
3.	*Anidra*	1.2	0.7	0.5	41.7	0.71	0.22	2.24	> 0.05	N.S.
4.	*Stambha*	1.2	1	0.2	16.7	0.42	0.13	1.5	> 0.05	N.S.
5.	*Kampa*	1.5	1.2	0.3	20	0.48	0.15	1.96	> 0.05	N.S.
6	*Shula*	1.3	1	0.3	23.1	0.48	0.15	1.96	> 0.05	N.S.
7	*Baddha pushishata*	1.8	1.1	0.7	38.9	0.82	0.26	2.69	<0.05	S.
8	*Daurbalya*	1.5	0.7	0.8	53.3	1.03	0.33	2.45	<0.05	S.
9	*Kriyahani*	0.8	0.1	0.7	87.5	0.82	0.26	2.69	<0.05	S.
10	*Svapa*	1.2	1	0.2	16.7	0.42	0.13	1.5	> 0.05	N.S.

Changes In Certain Laboratory Parameters (Group 1)

Sr. No.	Lab Investigation	Mean B.T.	Mean A.T.	Mean Dif.	Mean %	S.D.	S.E.	t	P	Result
1.	Fasting Blood Sugar	157.46	146.67	10.79	6.85	21.65	6.84	1.57	> 0.05	N.S.
2.	Post Prandial Blood Sugar	240.05	199.3	40.75	16.97	55.44	17.53	2.32	<0.05	S.
3.	HB gm%	13.78	13.33	0.45	3.27	1.11	0.35	1.28	> 0.05	N.S.
4.	HbA1c	28.4	22.6	2.8	20.4	17.1	5.41	1.07	> 0.05	N.S.
5 .	TLC	6310	5850	460	7.29	1891	600	0.77	> 0.05	N.S.

Changes In Certain Laboratory Parameters (Group 2)

Sr. No.	Lab Investigation	Mean B.T.	Mean A.T.	Mean Dif.	Mean %	S.D.	S.E.	t	P	Result
1.	Fasting Blood Sugar	158.58	136.82	21.76	13.72	43.47	13.74	1.58	> 0.05	N.S.
2.	Post Prandial Blood Sugar	231.96	199.8	32.16	13.86	42.52	13.44	2.39	<0.05	S.
3.	HB gm%	13.3	13.1	0.2	1.5	2.25	0.71	0.28	> 0.05	N.S.
4.	HbA1c	5.85	5.56	0.29	4.96%	0.13	0.04	0.28	> 0.05	N.S
5 .	TLC	6480	6870	390	6	1558	493	0.8	> 0.05	N.S.

Probable Mode Of Action

— The drug, that is *sneha kalpana* of *pramehaghna dravya*, firstly reduces the *prameha* pathogenesis and on the other hand neutralizes *vata vriddhi avastha*.

— Thirdly prevent, to some extent, onwards depletion of *dhatu* so as to prevent the development of *vataja prameha*.

— For controlling of *vata dosha,* the contents of *darvyadi ghrita* and *shilajatu have* properties of *rasayana, yogvahi, tridoshashamaka, grahi, deepana* and *amapachana* as well as *pramehaghna* effects.

Conclusion

- The study shows that *darvyadi ghrita* and *shilajatu* are effective in the management of *vataja complication of prameha*.
- Both the drugs reduce majority of the symptoms of *vataja* complication of *prameha* and *t*hese improvements in symptoms is brought about by *samprapti vighatana* of the disease.

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Clinical Study

Evaluation Of The Efficacy Of '*Darvyadi Kwatha'* And '*Madhumehari Churna'* In The Management Of *Madhumeha* W.S.R. To Diabetes Mellitus Type-2 (NIDDM)

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Abstract:

Diabetes Mellitus (DM) is commonly known as *Madhumeha* in *Ayurveda*. Incidence of DM is rising more rapidly in India. According to IDF SEA region, there were 69.1 million cases of diabetes in India in 2015. So, effective treatment of diabetes is needed. In current study, Evaluation of efficacy of '*Darvyadi Kwatha*' and '*madhumehari Churna'* was conducted in 30 clinically diagnosed patients of *Madhumeha* after randomly dividing them into 3 Groups. In Group A, 10 registered patients of DM Type 2 (NIDDM) were administrated *Darvyadi Kwatha* for 30 days. In Group B, 10 registered patients were administrated *Madhumehari Churna* for 30 days. In Group C, 10 registered patients were administrated both drugs *Darvyadi Kwatha* and *Madhumehari Churna* for 30 days.

Darvyadi Kwatha and *Madhumehari Churna* used either or combined showed symptomatic relief in the patients of *Madhumeha.*

Keyword: *Ayurveda*, *Madhumeha*, diabetes, *Kwatha*.

सारांश-

आयुर्वेद में डायबिटिज मेलाइटस को सामन्यत: मधुमेह के नाम से जाना जाता हैं। भारत मे डायबिटिज बहुत तेजी से बढ रहा हैं। आई.डी.एफ. के एस.ई.ए. क्षेत्र के अनुसार भारत में वर्ष 2015 में डायबिटिज के 69.1 मिलियन मामले थे, इसलिए डायबिटिज के प्रभावी उपचार की आवश्यकता है। प्रस्तुत चिकित्सीय अध्ययन में दार्व्यादि क्वाथ तथा मधुमेहारि चूर्ण के प्रभाव का मूल्याङ्कन मधुमेह के 30 नैदानिक रोगियों के Randomly विभाजित 3 समूहो पर किया गया। वर्ग A में डायबिटिज मेलाइटस टाईप 2 रोग के 10 पंजीकृत रोगियो को दार्व्यादि क्वाथ 30 दिनों तक दिया गया। वर्ग B मे 10 पंजीकृत रोगियों को मधुमेहारि चूर्ण 30 दिनों तक दिया गया। वर्ग C मे 10 पंजीकृत रोगियों को दार्व्यादी क्वाथ तथा मधुमेहारि चूर्ण 30 दिनों तक दिया गया। दार्व्यादि क्वाथ तथा मधुमेहारी चूर्ण को अलग-अलग या साथ देने पर मधुमेह के लक्षणों में सुधार दिखाई देता है।

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Clinical Study

Evaluation Of The Efficacy Of '*Darvyadi Kwatha*' And '*Madhumehari Churna*' In The Management Of *Madhumeha* W.S.R. To Diabetes Mellitus Type-2 (NIDDM)

Bhanu Tank, Deepak Kumar, C.B. Sharma, Udai Raj Saroj

Introduction:

The lifestyle and environmental conditions has tremendously changed. The prevalence of chronic, Non-Communicable Diseases (NCD) is increasing at an alarming rate. NCD's are closely linked to global social and economic development. Diabetes, commonly known as *Madhumeha* in *Ayurveda*, and all those patients who pass urine, which is sweet and resembles honey are said to be suffering from *Madhumeha*. It is the main risk factor for Hypertension, Cardiac diseases & other systemic complications. Various drugs belonging to different systems of medicine singly or combined are used in the management of Diabetes. However the complete cure cannot be accomplished. Healthy diet, regular physical activity, maintaining a normal body weight and avoiding tobacco use are ways to prevent or delay the onset of type 2 diabetes.

According to IDF SEA region[1], there were 69.1 million cases of diabetes in India in 2015.

Diabetes prevalence has been rising more rapidly in middle and low-income countries.

Diabetes is a major cause of blindness, kidney failure, heart attacks, stroke and lower limb amputation .In 2012, an estimated 1.5 million deaths were directly caused by diabetes and another 2.2 million deaths were attributable to high blood glucose.

Almost half of all deaths attributable to high blood glucose occur before the age of 70 years. WHO[2] projects that diabetes will be the 7th leading cause of death in 2030.

Need and significance of Present Research work:

Ayurvedic drugs are usually used in the form of combinations. These preparations are helpful in controlling the blood sugar levels and also benefit patient by relieving the distressing symptoms of Diabetes. Even on long term use they do not produce any resistance or tolerance. They also do not lower the blood sugar below the normal range and hence do not cause hypoglycaemia in any situation.

In *Ayurveda* '*Madhumeha*' is considered as disease of vitiated *Vata* and *Kapha Dosha* and *Agnimandya* is present in *Madhumeha*. *Acharya Charaka*[3] has used term ***"bahudrava shleshma tatha avabadha meda"*** in the description of *Prameha* and *Dushyas* involved in it are mainly *Meda, Mamsa, Kleda, Shukra, Shonita, Vasa, Majja* etc. are all *Kapha vargiya*. So ideally in *Shamana Chikitsa* such drugs should be used in its treatment which possess *Agnideepana* properties and should pacify the effects of aggravated *Dosha* like *Katu, Tikta, Kashaya* and *Ruksha Dravyas*.

The trial drugs *Madhumehari churna* and *Dravyadi Kwatha* are having mainly the above said properties. Hence they were selected for the present clinical trial. The ingredients of these drugs are easy to administer in patients and cost effective. That is the basic reason to select this medicine for present clinical study.

Aims And Objectives:

Evaluation Of The Efficacy Of '*Darvyadi Kwatha*' And '*Madhumehari Churna*' In The Management Of *Madhumeha* W.S.R. To Dm Type -2

Material and methods:

1) Selection of Cases-

The study was conducted on 30 clinically and pathologically diagnosed patients of ***Madhumeha*** W.S.R. to DM Type-2 (NIDDM). Selection of patients was made from OPD/IPD of *Arogyashala*, National Institute of Ayurveda and SSBH, Jaipur (Raj.).

2) Inclusion Criteria –

- Diagnosed cases of DM Type-2 (NIDDM).
- Patients having hyperglycemia confirmed by Laboratory Investigation i.e. FBS ? 126 mg/dl or PPBS ? 200mg/dl.
- Age group between 30-60 years of either sex.
- Patient willing to signature the consent form for the clinical trial.
- If the patient is already taking metformin atleast from 15 days, He/She will be included in this study with continuation of same medicine.

3) Exclusion Criteria –

Following patients excluded from clinical trial:-

- Patients having DM Type - I [IDDM]
- Age below 30 and above 60 years.
- Patient of DM type II (NIDDM) who are on Insulin therapy.
- DM associated with any type of Malignancy.
- DM with complications.
- Diabetes insipidus.
- Patient having any serious illness.
- Drug induced DM.
- FBS more than 160mg/dl.
- PPBS more than 250mg/dl (after two hour).
- DM with coronary artery diseases.
- *Sahaja Pramehi.*
- Patient having of chronicity of *Madhumeha* DM Type-2 more than five years.

4) Selection Of Drugs: *Darvyadi Kwatha*[4] and *Madhumehari churna*, was selected from *Charaka chikitsa* 6/26 and Formulary of Ayurvedic medicines part-1 NIA Jaipur respectively. Both drugs were prepared in NIA pharmacy as per classical instructions.

5) Administration of Drug:

30 clinically diagnosed patients were randomly divided into 3 Groups of 10 each as below:

Group A: Group of 10 registered patients of DM Type 2 (NIDDM) were administrated *Darvyadi Kwatha* for 30 days.

Group B: Group of 10 registered patients of DM Type 2 (NIDDM) were administrated *Madhumehari Churna* for 30 days.

Group C: Group of 10 registered patients of DM Type 2 (NIDDM) were administrated both drugs *Darvyadi Kwatha* and *Madhumehari Churna* for 30days.

6) Mode of Administration of Drugs:

A. Darvyadi Kwatha: 50 ml *Kwatha* twice a day in an empty stomach (Morning & Evening) for 30 days.

B. Madhumehari Churna: 5 gm *churna* twice a day before meal (half an hour)for 30 days with Luke warm water

Criteria for assessment:

The effect of trial drug was assessed in terms of:

- Subjective Assessment
- Laboratory Parameters

A) Subjective assessment- All the patients registered for clinical trial were asked for any changes in their clinical manifestations.

Especially the symptom of *Madhumeha* (DM) which were looked in to includes[5,6,7]-

1.	*Prabhoot mutrata*	(Polyuria)
2.	*Kshudhadikya*	(Polyphagia)
3.	*Trishnadhikya*	(Polydypsia)
4.	*Avil mutrata*	(Turbid urine)
5.	*Sharira Gaurava*	(Heavyness in body)
6.	*Vibandha*	(Constipation)
7.	*Hastpada Shoola*	(Pain in hands & legs)
8.	*Mukha madhurya*	(Sweetness in mouth)
9.	*Alasya*	(Laziness)
10.	*Panduvarna Mutra*	(Yellowish white urine)
11.	*Mukhshosha*	(Dryness of Mouth)
12.	*Klama*	(Fatigueness)

B) Laboratory Parameters:

- **Blood Sugar level:**

Fasting (FBS).

Post Prandial (PPBS).

- RFT. (Serum Creatinine, Blood Urea)
- LFT. (SGOT, SGPT)
- Glycosylated Hb (HbA1c).
- Urine Routine and Microscopy.
- Hb %, TLC and ESR.

Observations –

Maximum number of the patients is in between Age group 51-60 years (56.00%), Male sex (67.00%), Hindu Religion (90.00%), Govt. Employees (30.00%), married (97%), secondary educational status (43.00%), middle socio-economic status (60.00%). Maximum number of the patient's i.e. (90.00%) were on vegetarian diet, (27.00%) were house wives .(63.33%) of patients were having *samyaka nidra*, Maximum patients (90.%) were addicted with tea (47.00%) , Most of the patients (40%) were having *Vata-kaphaja Sharirika Prakriti*, (56%) of patients were having *Rajasika Manasika Prakriti*, (33%) patients were *Meda Sara* and *Mansa sara* each, (90%) patients were of *Madhyama Samahanana*, (64%) patients were having *Sarva rasa Satmya* and (83%) patients were having *Madhyama Satva*. *Madhyama Ahara Abhyavaharana Shakti* was found in (63%) patients and *Avara Vyayama Shakti* was found in (57%) patients.

The results of the therapeutic trial:

Table No. 1 showing Effect of therapeutic trial on clinical symptomatology in 30 patients of *Madhumeha* (D.M.Type II).

Variable	Grp.	Mean		Mean Diff.	% Relief	S.D.	S.E.	P Value	Signifi-Cance
		BT	AT						
Prabhoot	A	1.50	0.30	1.20	80.00 %	0.42	0.13	P<0.01	HS
Mutrata	B	1.00	0.20	0.80	80.00%	0.42	0.13	P<0.01	HS
(Frequency of Urine)	C	1.10	0.30	0.80	72.73%	0.42	0.13	P<0.01	HS
Kshudhadikya	A	0.70	0.10	0.60	85.71%	0.51	0.16	P<0.05	S
(Polyphagia)	B	1.10	0.30	0.80	72.73%	0.63	0.20	P<0.05	S
	C	1.00	0.20	0.80	80.00%	0.42	0.13	P<0.01	HS
Trishnadhkya	A	1.80	0.50	1.30	72.22%	0.48	0.15	P<0.01	HS
(Polydipsia)	B	2.30	0.40	1.90	82.61%	0.56	0.17	P<0.01	HS
	C	2.0	0.50	1.50	75.00%	0.52	0.16	P<0.01	HS
Avil Mutrata	A	0.90	0.10	0.80	88.89%	0.63	0.20	P<0.05	S
(Turbidity in Urine)	B	0.80	0.10	0.70	87.50%	0.48	0.15	P<0.05	S
	C	0.90	0.10	0.80	88.89%	0.63	0.20	P<0.05	S
Sharira Gauravta	A	0.60	0.10	0.50	83.33%	0.52	0.16	P>0.05	NS
(Heavyness in body)	B	0.40	0.10	0.30	75.00%	0.42	0.13	P>0.05	NS
	C	0.80	0.10	0.70	87.50%	0.48	0.15	P<0.05	S

Vibandha	A	0.50	0.20	0.30	60.00%	0.48	0.15	P>0.05	NS
(Constipation)	B	0.40	0.20	0.20	50.00%	0.42	0.13	P>0.05	NS
	C	0.70	0.20	0.50	71.43%	0.52	0.16	P>0.05	NS
Hasta pada Shoola	A	0.80	0.20	0.60	75.00%	0.51	0.16	P<0.05	S
(Pain in hands feet)	B	0.70	0.10	0.60	85.71%	0.69	0.22	P>0.05	NS
	C	0.90	0.10	0.80	88.89%	0.63	0.20	P<0.05	S
Mukha madhurya	A	0.40	0.10	0.30	75.00%	0.48	0.15	P>0.05	NS
(Sweetnes of Mouth)	B	0.40	0.10	0.30	75.00%	0.48	0.15	P>0.05	NS
	C	0.60	0.10	0.50	83.33%	0.52	0.16	P>0.05	NS
Alasya	A	0.40	0.10	0.30	75.00%	0.48	0.15	P>0.05	NS
(Lazyness)	B	0.40	0.10	0.30	75.00%	0.48	0.15	P>0.05	NS
	C	0.50	0.10	0.40	80.00%	0.51	0.16	P>0.05	NS
Pandur-varna	A	1.00	0.10	0.90	90.00%	0.31	0.10	P<0.01	HS
Mutrata	B	0.90	0.20	0.70	77.78%	0.67	0.21	P<0.05	S
(Yellowish urine)	C	0.90	0.10	0.80	88.89%	0.42	0.13	P<0.01	HS
Mukha shosha	A	0.50	0.10	0.40	80.00%	0.51	0.16	P>0.05	NS
(Dryness of mouth)	B	0.40	0.10	0.30	75.00%	0.48	0.15	P>0.05	NS
	C	0.80	0.10	0.70	87.50%	0.48	0.15	P<0.05	S
Klama (Fatigunes)	A	0.50	0.10	0.40	80.00%	0.51	0.16	P>0.05	NS
	B	0.50	0.10	0.40	80.00%	0.69	0.22	P>0.05	NS
	C	0.80	0.10	0.70	87.50%	0.48	0.15	P<0.05	S

Table No.2 showing Effect of therapeutic trial on lab parameters in 30 patients of *Madhumeha* (D.M.Type II).based on intra group comparison (pair t-test)[8]:

Variable	Grp.	Mean		Mean	%	S.D.	S.E.	P	Paired	Signifi-
		BT	AT	Diff.	Relief			Value	t-test	Cance
Hb%	**A**	12.24	12.95	-0.71	-5.80	0.44	0.14	P<0.01	5.06	**HS**
	B	14.42	14.10	0.32	2.22	1.07	0.33	P>0.05	0.94	**NS**
	C	13.03	13.90	-0.87	-6.68	0.62	0.19	P<0.01	4.42	**HS**
TLC/ cumm	**A**	6940.00	6690.00	250.00	3.60	227.00	71.88	P<0.01	3.48	**HS**
	B	6180.00	5950.00	230.00	3.72	194.65	61.55	P<0.01	3.73	**HS**
	C	7300.00	6950.00	350.00	4.79	143.37	45.33	P<0.01	7.72	**HS**

ESR (mm/h)	**A**	26.50	22.20	4.30	16.23	3.49	1.10	P<0.01	3.88	**HS**
	B	7.10	5.60	1.50	21.13	1.80	0.58	P<0.05	2.57	**S**
	C	32.80	27.20	5.60	17.07	4.70	1.50	P<0.01	3.73	**HS**
Fasting Blood	**A**	138.40	104.10	34.30	24.78	8.50	2.70	P<0.01	12.70	**HS**
Sugar (mg/dl)	**B**	135.40	113.50	21.90	16.17	21.20	6.70	P<0.01	3.26	**HS**
	C	140.50	110.00	30.50	21.71	13.47	4.26	P<0.01	7.15	**HS**
Post Prandial	**A**	196.10	141.10	55.00	28.05	27.95	8.83	P<0.01	6.22	**HS**
Blood Sugar	**B**	177.30	135.00	42.30	23.86	14.96	4.73	P<0.01	8.93	**HS**
(mg/dl)	**C**	192.00	144.00	48.00	25.00	26.03	8.23	P<0.01	5.82	**HS**
Blood Urea	**A**	33.50	29.40	4.10	12.24	4.60	1.40	P<0.05	2.80	**S**
	B	33.90	31.30	2.60	7.67	1.50	0.47	P<0.01	5.46	**HS**
	C	33.90	31.30	2.60	7.67	1.50	0.47	P<0.01	1.60	**HS**
Sr. Creatinine	**A**	0.83	0.76	0.70	84.34	0.12	0.04	P>0.05	1.76	**NS**
	B	0.86	0.74	0.12	13.95	0.06	0.02	P<0.01	6.00	**HS**
	C	0.67	0.59	0.08	11.94	0.09	0.02	P<0.05	2.75	**S**
SGOT	**A**	36.10	32.10	4.00	11.08	3.13	0.98	P<0.01	3.13	**HS**
	B	32.70	30.70	2.00	6.12	1.83	0.57	P<0.01	3.46	**HS**
	C	36.30	32.00	4.30	11.85	1.82	0.57	P<0.01	7.43	**HS**
SGPT	**A**	24.90	22.50	2.40	9.64	2.07	0.65	P<0.01	3.67	**HS**
	B	25.70	23.60	2.10	8.17	2.55	0.80	P<0.05	2.59	**S**
	C	29.50	24.50	5.00	16.95	3.30	1.04	P<0.01	4.79	**HS**
G Hb%	**A**	6.17	5.90	0.27	4.38	0.12	0.04	P<0.01	6.82	**HS**
	B	5.85	5.56	0.29	4.96	0.13	0.04	P<0.01	6.69	**HS**
	C	6.38	6.03	0.35	5.49	0.20	0.06	P<0.01	5.35	**HS**

Discussion:

In *Ayurveda,* the action of drugs is determined on Pharmacodynamic factors as *Rasa, Guna, Veerya* and *Vipaka* along with certain specific properties called *Prabhava (Karma)*, which cannot be explained on these principles inherited by the drugs. In pathogenesis of *Madhumeha, Vata Dosha* is predominant factor. For controlling of *Vata Dosha,* the contents of *Darvyadi Kwatha* and *Madhumehari churna have* properties of *Rasayana* and *Yogvahi* effects. *Darvyadi Kwathas* contents have of *Laghu, Ruksha Guna* which balanced with *Snigdha, Guru Guna. Laghu Guna* is *Kaphaghna*, promotes *Vata Dosha* and depletes the quantum of *Dhatus* in the body. *Ruksha Guna* also promotes *Vata Dosha* and pacifies *Kapha* and *Meda Dhatus*

Properties of the trial drug like *Kashaya-Tikta Rasa*[9], *Katu Vipaka* may act synergistically to produce beneficial effects on the disease by virtue of its *Ojovardhaka*, *Rasayana*, *Tridoshashamaka, Yogvahi, Grahi, Deepana* and *Amapachana* as well

as *Pramehaghna* effects. These effects may be helpful in *Samprapti Vighatana* of *Madhumeha*.

Conclusion:

The study shows that *Darvyadi Kwatha* and *Madhumehari Churna* are effective in the management of *Madhumeha*. Both the drugs reduce majority of the symptoms of *Madhumeha* (Diabetes Mellitus) that include *Prabhoota Mutrata* (Polyuria), *Kshudadhikya*(Polyphagia) *Pipasadhikya*(Polydipsia), *Avila Mutrata Hasta-pada Shool* (Pain in hands & legs)), *klama* (Fatigue), and *Pandurvarna Mutrata*. These improvements in symptoms is brought about by *Samprapti Vighatana* of the disease. It proves that the trial drugs posses hypoglycemic effect.

- The trial drugs were effective in reducing Fasting Blood Sugar, Post Prandial Blood Sugar and G Hb.
- Therapy was well tolerated by all the patients and no toxic or unwanted effects were noticed in any patient.
- It can be concluded that the medicines *Darvyadi Kwatha* and *Madhumehari Churna* in current study show improvement in symptoms of *Madhumeha* (Diabetes Mellitus Type II) and can be used safely in patients of *Madhumeha* (Diabetes Mellitus Type II).

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Clinical Review

A Review of pathophysiology (pathways) and treatment of Diabetic Retinopathy as a complication of Diabetes (*Prameha Upadrava*) with special reference to the use of *Vasant Kusumakar Ras*

*Dr. Sanjay Tamoli, **Prof. Dr. K.R. Kohli

Abstract :

Diabetic Retinopathy (DR) is a leading cause of blindness occurring in long standing Diabetes Mellitus, controlled or uncontrolled. *Prameha* has been described in *Ayurveda*, however no or very sparse description is available indicating its progression to vision loss. *Ayurvedic* treatments are designed to correct the underlying pathophysiology. This paper reviews the pathophysiology of *Prameha, Prameha Upadrava* and DR. An attempt is made to understand the therapeutic targets with reference to the use of *Vasant Kusumakar* Ras (VKR) in DR.

Ayurvedic literature including the *Samhitas*, research articles, e-journals and medical texts were used as source materials. Pathophysiological components like *dosha, dhatus, kala, Marma, strotas* etc. were studied. Findings from clinical studies on VKR, where retinal funduscopy was done as an evaluation tool were also used.

Results of the study observed that though development of vision related complications have not been elaborated in Ayurveda, deeper understanding of the pathophysiology underlines its existence. The concept of occurrence of *Dhatu Ksharan* in *Prameha* is evidenced in DR confirmed with Retinal Funduscopy. A striking resemblance with the three stages of DR and *dosha* predominance is also evidenced. Evidence based clinical study on VKR as a *Rasayana* drug establishes the clinical efficacy of *Ayurveda* preparations in DR.

Ayurveda understanding of Pathophysiology of *Prameha* explains the occurrence of DR. *Rasayana* preparations that prevent *Dhatu Kasharan*, have *Pramehahar* property and are *Netrya* (Eye tonics) can form standard treatment for DR. Use of comprehensive treatment procedures like *Trapan, Anjan, Shodhan* etc. are also required apart from compounds like VKR.

सारांश–

डायबिटिज रेटिनोपैथी जो कि अंधता का मुख्य कारण है वह लम्बे समय तक डायबिटिज मेलाईटस के परिणाम स्वरूप होता है। आयुर्वेद में वर्णित प्रमेह में दृष्टि नाश के बारे में बहुत अधिक वर्णन नहीं मिलता है। आयुर्वेदिक चिकित्सा द्वारा इसकी सम्प्राप्ति विघटन किया जाता है। इस शोध पत्र में प्रमेह की सम्प्राप्ति, प्रमेह उपद्रव और डायबिटिज रेटिनोपैथी का वर्णन किया है। बसन्त कुसुमाकर रस का डायबिटिज में उपयोग किया गया है। इसके लिए आयुर्वेदीय साहित्य में संहिता, रिसर्च पेपर, ई–जर्नल का उपयोग किया गया है। वात, पित्त, दोष, मर्म, स्त्रोतस् का अध्ययन किया गया है। रेटिना फंडोस्कोपी की मदद ली गई है। आयुर्वेद में दृष्टि नाश से संबधित वर्णन स्पष्ट रूप से नहीं मिलता है लेकिन धातु कर्षण मिलता है जिसकी पुष्टि रेटिना फंडोस्कोपी से होती है।

डायबिटिज रेटिनोपैथी की चिकित्सा में रसायन योग जो कि धातु कर्षण को रोकते है। प्रमेह नाशक है तथा नेत्र्य हैं। बंसत कुसुमाकर रस के अलावा तर्पण, अञ्जन, शोधन प्रक्रम का भी उपयोग किया है।

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Clinical Review

A review of pathophysiology (pathways) and treatment of Diabetic Retinopathy as a complication of Diabetes (*Prameha Upadrava*) with special reference to the use of *Vasant Kusumakar Ras*

Dr. Sanjay Tamoli, Prof. Dr. K.R. Kohli

Introduction:

Diabetic Retinopathy (DR) is a leading cause of blindness occurring in long standing Diabetes Mellitus (DM). Controlling blood sugar levels and maintaining good glycemic control are of paramount importance in the prevention and management of Diabetic complications including DR. Though various researches have shown that mere control of blood sugar/glycaemia does not essentially have curative or reversible effects on DR.

Diagnosis of DR at early stages remains to be important in its treatment. Diagnostic methods like Funduscopy and Fundus Fluorescent Angiography (FFA) have played an important role in the detection and predicting prognosis of DR. These modern diagnostic tools have also been used in various research studies on *Ayurvedic* compounds. These diagnostic methods help to understand underlying pathophysiology as described in *Ayurveda*.

Prameha has been elaborately described in *Ayurveda*. Direct description of the involvement of *Netra* or *Drusti* is found sparingly in the *Ayurvedic* Literature. However detailed review of the literature and deeper understanding of the various etiopathological components and their involvement in the development of DR can be highly appreciated in the *Ayurvedic* texts. *Ayurvedic* management methods and medicaments of DR are designed to correct the underlying pathophysiology.

This paper reviews the pathophysiology of *Prameha, Prameha Upadrava, Prameha Janya Netra Rog* and DR. An attempt is made to understand the therapeutic targets with reference to the use of *Vasant Kusumakar Ras* (VKR) in DR.

Methods:

Ayurvedic literature including the *Samhitas,* research articles & e-journals were used as source materials. Modern texts including research publications were also used to understand Diabetic Retinopathy. Pathophysiological components like *dosha, dhatus, Marma, Strotas* etc. were studied and interpreted. Treatment methods, formulations, compounds etc. were also reviewed from the point of their features and benefits. Fundus Photographs, Fundus Florescent Angiography (FFA) pictures were used to understand the various etiopathological changes described in *Ayurveda*. A correlation was tried to establish between the changes visualized on these Photographs and the *Ayurvedic* Pathophysiological outcomes. Findings from clinical studies on *Vasant Kusumakar Ras* (VKR), where retinal Funduscopy was done as an evaluation tool were also used. Text, Tables, Flow charts and Diagrams are used to present results of the study.

Results:

A. Review of Modern Literature:

Diabetic Retinopathy is the most common micro-vascular complication of Diabetes Mellitus, which can lead to progressive loss of vision or blindness[1]. In DM, along with hyperglycemia various factors such as inflammatory mediators, lipids and hormones contribute to cause Diabetic Retinopathy[1]. These pathological factors damage retinal cells, vessels cells (pericytes, endothelial cells and basement membrane), neurons (photoreceptorsand ganglions), glia (Muller cells and astrocytes), microglia and pigment epithelial cells[1]. Nearly all patients with type-1 DM and > 60% of patients with type-2 DM are expected to have some retinopathy after 20 years of incidence of DM[2].

DR can be classified into Non-Proliferative Diabetic Retinopathy (NPDR), Proliferative Diabetic Retinopathy (PDR), Diabetic Maculopathy and Advanced Diabetic Eye Disease (ADED). NPDR is

characterized by micro-aneurysms, capillary dilatations at initial stage and small haemorrhages, ischemia, necrosis of retinal nerve fibres (cotton wool spots), venous loops and intra-retinal microvascular abnormalities (IRMA) in later stage. NPDR also leads to development of PDR. In PDR, new vessels & connective tissues grow on retina or optic nerve head & into the vitreous[5-7]. Uncontrolled PDR can develop into ADED which is characterised by persistent vitreous haemorrhage, tractional retinal detachment, and neo-vascular glaucoma[5]. Diabetic maculopathy or diabetic macular oedema (DME) is caused due to increased vascular permeability and neovascularisation[5-7].

The pathophysiology of DR is a complex process. Metabolic derangements in DM contribute to cause chronic and persistent hyperglycaemia[6]. This leads to major biochemical pathways of hyperglycaemic damage such as polyol pathway (aldose reductase enzyme), non-enzymatic glycosylation, accelerated formation of advanced glycation end-products (AGEs), increased expression of growth factors (VEGF, IGF-1), protein kinase C pathway, hemodynamic changes, activation of renin-angiotensin-aldosterone system (RAAS), and inflammation[2]. Also, the factors like oxidative stress due to over production of reactive oxygen species leads to retinal damage and vision loss[7-9].

Medical management of DR is primarily directed towards its prevention. Lifestyle modification, early detection, tight glycaemic control, blood pressure and serum lipid management are associated with reduction in the development of DR. Also, periodic ocular check-up is required to detect the DR progression. Pharmacological therapies of DR include drugs including aldose reductase inhibitors, anti-VEGF, PKC inhibitors, statins, somatostatin analogues, corticosteroids, ACE inhibitors, RAS inhibitors and several others. Also, few nutritional, antioxidant and rejuvenating supplements have commonly been used in DR management[7,8,10]. In recent years, laser photocoagulation and vitrectomy are indicated to treat Macular Diabetic Retinopathy and Proliferative Diabetic Retinopathy. Unfortunately, a reliable and satisfactory treatment for DR is yet not available[2,5].

B. Review of *Ayurvedic* Literature:

1. References of *Prameha Janya Netra Roga* in *Ayurveda* (Diabetic retinopathy):

The relevance of direct references is limited to academic purpose of providing evidence of description of disease conditions in *Ayurvedic* texts. However as mentioned in the *Ayurvedic* texts several *Anuktavyadhis* and their *upadravas* can be well understood and appreciated by understanding their underlying pathophysiology.

Though description of vision related complications of *Prameha* are not too elaborated in *Ayurveda* some direct references are available in texts. *Acharya Sushruta* while describing the complications (*Upadrava*) of *Prameha*, mentions *Pratishyaya* as one of its complications. *Pratishyaya,* is mentioned in the *Ayurvedic* texts to cause various ocular and vision related complications[11]. Along with these, another complication mentioned is *Pandu* (Anemia). *Pandu* also leads to *Hatendriya lakshana* (damage to sense organs) in its progression stage as described by *Acharya Charaka*[12]. While describing complications according to *Doshika* predominance of *Prameha*, *Peeta vina-mutra-netrata* (yellow discoloration of stool, urine and eyes) is categorized under complication of *Pittaja Prameha* by *Acharya Sushruta*[11]. Thus all these references give a clue towards involvement of eyes as a complication of *Prameha*. In *Sushruta Samhita* while describing treatment of *Madhumeha* in *Madhumeha Chikitsa* chapter, there is description of *Tuvarakadya Anjana* containing *Tuvaraka Majja, Saindhava, Anjana* and *Tuvaraka Taila,* which is said to be useful in many eye diseases like *Timira* etc. So it may be an indirect reference of *Timira* occurring due to *Madhumeha*[13].

Timira is an important disease described in drishtigata *rogas* (Third and Fourth Patal) [14], which means darkness/increased dampness in the eyes. Some research publications have explained *Timira* based on different *dosha* predominance and have compared it to DR and termed it as *Madhumeha Janya Timira*. *"Netra Prakashika"* written by *Poojyapada Mahamuni* (available in manuscripts form (*Pandulipi*) at *Tanjor Maharaja Sarfoji Saraswati Mahala* library & also published by CCRAS mentions of *Netra Roga* being caused due to *Prameha*[15].

2 *Ayurveda* understanding of Diabetic Retinopathy (*Prameha Janya Drusti/Netra Roga*):

Ayurvedic descriptions of *Prameha/ Madhumeha* shows much resemblance to the modern day Diabetic Mellitus in its etiology, signs, symptoms, etiopathogenesis and management modalities. *Prameha* usually predominant with *Kapha Dosha*, by the passage of time involves other *Doshas* along with *Dushyas* and *Malas* in its *Samprapti*[16]. The complications of *Prameha* are considered to be developing due to various factors like – involvement of the three *Doshas* and majority of *dhatus*, formation of *Kleda, Dhatu daurbalya, Dhatu abadhata* or *Shithilata, Strotas dusti* (*Rakta, Mansa, Meda* and *Majja*)[16].

These pathological components initiates different *vikritis* in all the *Trimarmas*, namely *Shiras-Nabhi-Vasti* which get seriously affected if the condition of *Prameha* is not adequately treated in time[17]. It has been mentioned in classics *"Hrinnetrajihwasravanopadeha"* which gives direct clue regarding the involvement of vital organs like eyes in *Prameha Samprapti*[18].

In the current day practice increased risk of ocular Micro-vasculopathy, Coronary Artery Disease and Diabetic Nephropathy are the common complications of DM which resemble to the one described in *Ayurveda*. In *Shiro Marma, Prameha/ Madhumeha* usually affects *Netra Indriya* leading to various complications that may lead to blindness. Some of the major ocular complications of Diabetic Mellitus are DR, Cataract, Diabetic Maculopathy, Diabetic Pappilopathy and other types of refractive errors.

2.1. *Doshik* predominance in Diabetic Retinopathy: *Tridosha* vitiation with the predominance of *Kapha* initiates the development of *Prameha*/Diabetes and so also its complication DR. The stage wise development of DR from being non-proliferative to Proliferative and further to retinal detachment can be very well understood from *Ayurveda Samprapti*.

2.1.1 *Kapha* - The *bahuta* and *abadhata* of *Kapha Dosha*[19] produces *Srotho-dusti* which leads to *Dhatwagni mandya*. *Rakta* and *Mansa Dhatwagni mandya* leads to *Rakta* and *Mansa Srothovaha Vaigunyata* and cause deposition of *Sama-kapha* or *kleda* in the minute channels in the retina. These are visualized in the form of exudates in the Retina on funduscopic examination.

2.1.2 *Pitta* - *Pitta* and *Rakta* have *Ashrayashrayibhavas*. The already existing *Rakta Dusti* in the eyes causes *Pitta Prakopa*. Mild presence of *Pitta-prakopa, Rakta dusti* and *Srothorodha* in the *Raktavaha Strotas* lead to the destruction of the micro vessels and consequent dilation and hemorrhage. These can be visualized in retina as retinal/Pan retinal hemorrhages, Dot and Blot Hemorrhages.

2.1.3 *Vataja* - *Vata* here gets deranged due to *Avarodha* by *Kapha, Kleda* and *Meda* leading to occlusion. *Vata* may also get deranged due to the constant *Kshaya* of the *Dhatus*[20]. These *Avaran* or *Kshaya* related *Vata* vitiation thus causes either macular degeneration or detachment of the Retina.

Table 1: *Dosha* and *Guna* understanding with respect to changes in DR

Sr. no	*Dosha* Predominance	*Guna Vikruti*	Findings in Funduscopy
1	*Kapha*	*Bahuta* and *Abadhata*	Retinal Leakages, Exudates, Edema
2	*Pitta*	*Sara, Ushna, Drava*	Hemorrhages, Dot and Blot hemorrhages
3	*Vata*	*Chala, Ruksha*	Terminal stage with detachment

2.2. Role of *Kleda* and the involvement of three *Marmas*:

The formation of *Kelda* (*Bahu* and *Abaddha*) and its involvement in the development of *Prameha* and its complications including DR is very vital. This *Kleda* can be well understood as increased fluidity of the *Dhatus* viz. *Rakta, Meda* and *Mansa Dhatus*[21]. This *Vikruta Kleda* (morbid fluid content) when

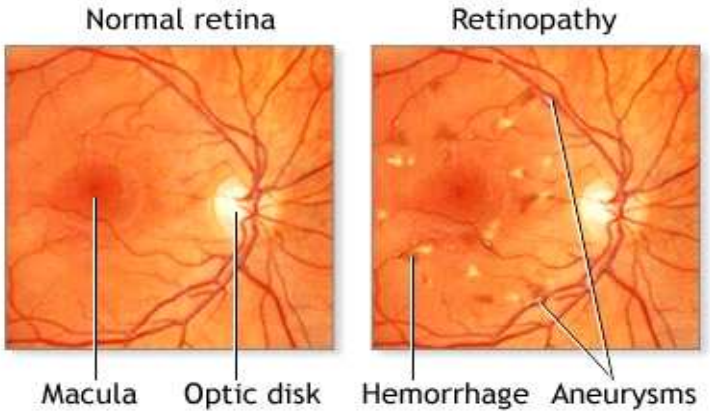
combined with *Tridoshas* initiates *Vikruti* (deformity) in all the three important *Marmas* (Vitals parts of body). The *Trimarmas* namely *Shiras* (Head), *Hridaya* (Heart) and *Vasti* (Kidneys) are seriously affected, if *Prameha* is not properly treated. The involvement of *Trimarmas* (Head, Heart and Kidneys) in complication stage are important events in the progression of *Prameha*. Diabetes mellitus also presents with dreadful complications of these three *Marmas* namely *Shiras* (Retinopathy and CNS complications), *Hridaya* (Cardiomyopathy) and *Vasti* (Nephropathy). Moreover a serious fact mentioned in classics is "*Upadeha* in *Hridaya, Netra*, *Jihwa* and *Shravana*", even in the prodromal stage of *Prameha*; which gives direct clue regarding slow involvement of vital organs like eye since early stages of *Prameha* which become more evident in later stages.

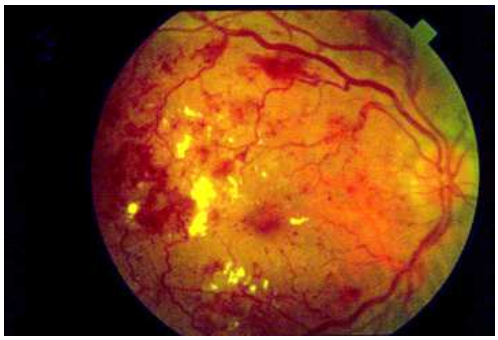
2.3. *Strota dusti Lakshanas* in *Prameha Janya Netra Roga* (Diabetic Retinopathy):

The four major *lakshanas* (Signs/symptoms) of *Strotas Dusti* namely *Atipravruti, Sang, Sira Granthi* and *Vimarg gaman*[22] can be very well illustrated in DR evaluation by Fundus examination. All the four signs/symptoms can be seen at various stages of development of Diabetic Retinopathy as seen in the below tables and pictures.

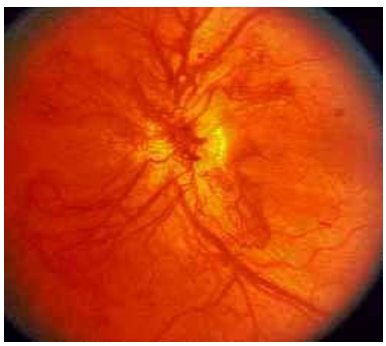
Table 2: *Strotas dusti Lakshanas* illustrated in Diabetic retinopathy

Sr. no	*Strotas Dusti Lakshan*	Findings in Funduscopy
1	*Atipravruti* (increased formation)	Neovascularization
2	*Sang* (occlusion)	Occlusion of retinal Vessels, Retinal Hypoxia
3	*Sira Granthi* (deformities in anatomical structures)	Micro-aneurysm formation
4	*Vimarg gaman* (fluctuation or deflection)	Hemorrhages, Retinal Detachment





Pre-proliferative Diabetic retinopathy



Proliferative Diabetic retinopathy

non-availability of diagnostic tools. However it is better to understand Diabetic retinopathy with the clinical and funduscopic findings and then understand the changes from the various aspects of etiopathological changes like *Avarodha, Sang, Visarg, Vimarg-gaman* etc. due to the involvement of *Doshas, Dhatus* and *Kleda* which have been elaborately described in *Ayurveda*. Present day instrumental analysis of organs like Retina have made it easier to appreciate these changes mentioned in the Ayurvedic Samprapti of *Prameha Janya Netra Upadrava*. The *Doshik* predominance in these conditions can also be differentiated through these fundus examinations and recording systems. Ayurveda understanding of Pathophysiology of *Prameha* explains the occurrence of DR.

Rasayana preparations that prevent *Dhatu Ksharan*, have *Pramehahar* property and are *Netrya* (Eye tonics) can form standard treatment for DR. Use of comprehensive treatment procedures like *Tarpan, Anjan, Shodhan* etc. are also required. *Rasayana* preparations like *Vasant Kusumakar Ras* are highly recommended in the successful management of *Prameha Janya Netra Rog* (Diabetic Retinopathy).

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Pharmacological Review

Amalaki: A potential drug in management of diabetes mellitus and prevention of its complications

*Dr. Aniket Palande, **Dr. Nisha Kumari Ojha, ***Prof. Satyendra Kumar Tiwari

Abstract-

Introduction-Diabetes mellitus is a serious complex chronic condition that is a major source of ill health worldwide. It is one of the largest global health emergencies of the 21st century. As per WHO (Global report on diabetes 2016) individuals suffering with disease risen from 108 million in 1980 to 422 million in 2014. India leads the world with maximum number of diabetic patients being termed as the "diabetes capital of the world." In spite of diet restrictions and oral hypoglycemic drugs, the control of blood glucose level is the biggest challenge for the attending physician. The long standing hyperglycemia adversely affects multiple organ system, especially heart, kidney, eyes and sensory nerves. Ayurveda classics had explained the disease *madhumeha* and its treatment very precisely. **Material methods-**Various *Ayurveda classics* and studies published in journals related to *madhumeha* are reviewed and analyzed. **Result-**Evidences from various studies show that phytochemicals/(Polyphenols) obtain from *Amalaki* (*Emblica Officinalis*) are potential therapeutics that act alone or supplement anti-diabetic drugs in the prevention and treatment of diabetes and its complications. **Discussion & Conclusion -** Possible mechanism of its anti-diabetic activity appears to be either improvement in peripheral glucose utilization, increased insulin sensitivity or anti-oxidant property. Therefore *Amalaki* can be a promising drug in combination with oral hypoglycemic drug in the management of diabetes mellitus and prevention of its complications.

Key words: *Amalaki*, *Prameha*, Anti-diabetic, Anti-oxidant**.**

सारांश–

परिचय–मधुमेह एक गंभीर जटिल दीर्घकालिक स्थिति है, जो कि दुनिया भर में खराब स्वास्थ्य का एक प्रमुख कारण है। यह 21वीं सदी की सबसे बड़ी वैश्विक स्वास्थ्य आपात स्थितियों में से एक है। डब्लूएचओ (ग्लोबल रिपोट डायबीटिज 2016) के अनुसार इस व्याधि से पीड़ित व्यक्तियों की संख्या 1980 में 108 मिलियन से बढ़कर 2014 में 422 मिलियन हो गई है। दुनिया में सबसे अधिक मधुमेह के रोगी भारत में पाये गये है। इसीलिए भारत को 'मधुमेह की राजधानी' कहा जाता है। अपथ्य आहार का प्रतिबन्ध कर और हाइपोग्लाइसेमिक दवाओं को देने के बावजूद भी रक्त शर्करा के स्तर का नियन्त्रण चिकित्सको के लिए सबसे बड़ी चुनौती है। लंबे समय तक रहने वाला हाइपरग्लेसेमिया शरीर के कई अंगों को प्रभावित करता है। विशेष रूप से हृदय, गुर्दे, आँखे और संवेदी नसे। आयुर्वेद ग्रन्थों में मधुमेह और इसकी चिकित्सा का विधि पूर्वक वर्णन किया गया है। **विधि**–विभिन्न आयुर्वेद ग्रन्थों और मधुमेह से संबंधित प्रकाशित पत्रिकाओं में हुई समीक्षाओं का विश्लेषण किया गया है। **परिणाम** – विभिन्न अध्ययनों के प्रमाणों से ज्ञात होता है कि आमलकी से प्राप्त फाइटोकेमिकल्स (पॉलीफेनोल) मधुमेह की संभावित चिकित्सीय उपचार में अकेले कार्य करते है या मधुमेह की रोकथाम और उसके जटिलताओं में उपचार के लिए मधुमेह विरोधी दवाओं का सहयोग करते है। **विमर्श और निष्कर्ष** – आमलकी से होने वाली मधुमेह विरोधी गतिविधि के संभावित कारण या तो परिधीय ग्लूकोज उपयोग में सुधार, इंसुलीन की बढ़ोतरी या एंटी–ऑक्सीडेन्ट गुण में वृद्धि हो सकते है। इस प्रकार हाइपोग्लाइसेमिक दवा के संयोग से आमलकी, मधुमेह की चिकित्सा और इसके द्वारा उत्पन्न होने वाले उपद्रवों की रोकथाम हेतु एक आशाजनक औषधि हो सकती है।

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Pharmacological Review

Amalaki: A potential drug in management of diabetes mellitus and prevention of its complications

Dr.Aniket Palande, Dr. Nisha Kumari Ojha, Prof. Satyendra Kumar Tiwari

Introduction

Diabetes mellitus is a serious complex chronic condition that is a major source of ill health worldwide. It is one of the largest global health emergencies of the 21st century. The number of people with diabetes is increasing due to population growth, aging, urbanization and increasing prevalence of obesity and physical inactivity. As per WHO (Global report on diabetes 2016) individuals suffering with disease risen from 108 million in 1980 to 422 million in 2014; Latest reports of World Health Organization (WHO) predicts that, diabetes population will increase by 122% in 2025.India leads the world with maximum number of diabetic patients being termed as the "diabetes capital of the world."

The changes in life expectancy and lack of improvement in health care are responsible for the outstanding rise in the incidence of diabetes mellitus (DM). Consequently countries around the globe are facing a significant increase in the burden for health care as patients with diabetes are prone to both short term and long term complications and early deaths. In this metabolic disease which is specially related to faulty life-style *Ayurveda* can provide the best management and also prevention of its complication.

Inclusion of *Prameha* among the eight major disorders in *Caraka Nidana*, shows the significance the disease was given by the seer. The disease was considered among the *Mutragata Rogas* and as many as 20 types had been identified. Each of these 20 types when seen with a western angle seem to stem from different causes and the wisdom of the sages in putting all these under a single group is seen with some amount of suspicion. Of late many comparisons have been made between *Prameha* – particularly *Madhumeha* with Diabetes mellitus but the matter is yet to be settled.

The word *Prameha* has two parts *Pra* means abundant and *Meha* means passing of large quantity of urine. Also the word dibetes has been came from the greek word Diabainein that means cross through a siphon meaning continuous free flow of water. Thus the word *prameha and Diabetes* have similar meaning. The term *madhumeha* and diabetes mellitus are analogus *madhu* and mellitus means honey and thus *madhumeha* and diabetes mellitus means passing of large quantity of sweet urine. So we can correlate *Prameha* and Diabetes while *Madhumeha* and Diabetes Mellitus have similar meaning.[1]

The indian traditional system has already proven its importance in management of *madhumeha.* Many more formulations and drugs had their in *Ayurveda* one of these drugs that is *Amlalaki* (Emblica Officinalis) also has proven its role to manage *madhumeha.* EO has important place in *Ayurveda*. Acconding to ancient history it is the first tree to be created in the universe. It belongs to family Euphorbiaceae. It is also named as *Dhatriphala, Amla,* Indian gooseberry etc. It has beneficial role in diabetes, heart diseases, cancers, liver disoreders etc. Also it shows it shows its activity viz. antioxidant, immunomodulatory, antipyretic, analgesic, cytoprotective, antitussive and gastroprotective. Additionally it is useful in ophthalmic disorders and lowering cholesterol level.

Material methods

Various *Ayurveda* classics and studies published in journals related to *madhumeha* are reviewed and analyzed. Various research work have been reviewed and analyzed.

Samprapthi of *Prameha*

Kapha undergoing increase by the etiological factors, reaches various *dooshyas* like *rasa* (plasma), *rakta* (blood) etc., As there is a *shaithilyata* (looseness) in the body and it being fluid predominant, spreads all over the body and gets

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Pharmacological Review

Scope of *Saptachakra* (*Salacia reticulate* Wight). in the management of *Madhumeha* induced complications

*Dr. Irshad Ahmed **Dr. Chandan Singh

Abstract

Salacia reticulate Wight. normalizes insulin level and help you lose weight. If anyone craves for carbs, chances are that the body needs enough protein. It is actually a physiological craving caused by the way your body chemistry react to carbohydrate and sweets. On the other hand, if excess glucose remains in the circulation, it actually stimulates lipogenesis (fat production and storage) and induces the complication of diabetes. *Salacia* has potent anti-oxidants properties and triglyceride. It contains mangiferin, a polyphenol, which enhances the body's sensitivity to insulin, and contains inhibitors of sugar digestion and absorption.

Keywords : *Salacia reticulate* Wight, Lipogenesis, mangiferin, polyphenol.

सारांश–

सप्तचक्र (*Salacia reticulate* Wight) इंसुलिन के स्तर को कम करते हैं और अपना वजन कम करने में मदद करते हैं। अगर किसी को कार्बोहाइड्रेट की तलाश होती है, तो संभावना है कि शरीर को पर्याप्त प्रोटीन चाहिए। यह वास्तव में एक शारीरिक आवश्यकता है। जिस तरह से आपके शरीर के रसायन कार्बोहाइड्रेट और मीठे पदार्थ पर प्रतिक्रिया करते हैं। यदि अतिरिक्त ग्लूकोज रक्त परिसंचरण में रहता है, तो यह वास्तव में लिपोजेनेसिस (वसा उत्पादन और भंडारण) को उत्तेजित करता है और मधुमेह की जटिलता को प्रेरित करता है। सप्तचक्र (*Salacia reticulate* Wight) में एंटी–ऑक्सीडेंट गुण और ट्राइग्लिसराइड होते हैं। इसमें मेंजीफेरिन, एक पॉलीफेनॉल होता है, जिससे शरीर की इंसुलिन संवेदनशीलता बढ़ जाती है, और इसमें मीठे पदार्थ के पाचन और अवशोषण के अवरोधक शामिल हैं।

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Pharmacological Review

Scope of *Saptachakra* (*Salacia reticulate* Wight). in the management of *Madhumeha* induced complications

Dr. Irshad Ahmed, Dr. Chandan Singh

Introduction - Almost all *Ayurvedic* text books have explained about the disease *Madhumeha*; some of the *Acharyas* (ancient authors) termed it as *Kshudrameha* as *Kshoudra* is the synonym of *Madhu* (honey). Diabetes mellitus is correlated with this disease. People are anxious to know regarding this disease elaborately. Because, now in the whole world, nearly about 24% of the population are suffering from this disease. Its percentage may go as high as 40-45% in 2020- WHO says. So, there is intense need to know the graveness of the disease and to understand the possible ways of preventive aspects of this disorder.

Word derivation: *Madhumeha* is a compound word made up of *Madhu* and *Meha*.

***Madhu*: –** The word '*Madhu*' is derived from the root '*Mana*' and meaning ' manae Bhodane: which gives Psychic contentment ***Meha*: –** The word '*Meha*' is derived form the root '*Miha*' which is employed in the sense of sinchana to moisten, *ksharana* to flow, ***prasrava*:** – excessive excretion (*vachaspathyam*)

Ancient Ayurvedic scholars have grouped *Madhumeh* (Diabetes mellitus) under one among the 20 *Prameha* (urinary disorders); particularly one of the kind of vatic disorder. Also, any of the *prameha* (urinary disorder) if neglected ultimately it ends up in *madhumeh* due to nature of the illness. This is evident in the verses of *Acharya Sushruta*-

सर्व एव प्रमेहास्तु कालेनाप्रतिकारिणः।
मधुमेहत्वं आयांति तदा असाद्यता भवन्ति हि॥ (सु. नि. 6)

Highest risk group are those who:

- Above 45 years
- Obese / overweight
- Family history of T2DM
- Pre-diabetes
- Do not exercise
- Have low HDL or high triglycerides
- Have high BP
- Have had Gestational Diabetes
- High fat and carbohydrate diet
- High alcohol intake
- Are older people
- Women having PCOS

Characteristic feature of Madhumeha as per Ayurveda: Madhumeha is a disease in which urine of the patient is sweet like honey and quantitatively increased as well as astringent, pale and rough in quality and the whole body of madhumehi becomes sweet. Other Acharyas also opines the same (As Sa ni 10/14 As. Hr ni 10/18, 21; ch. Ni 4/44, Su Ni 6/14, Ma Ni 33/26.)

Causes for diabetes in Ayurveda –

आस्यसुखं स्वप्नसुखं दधीनि ग्राम्योदकानूपरसाः पयांसि।
नवान्नपानं गुडवैकृतं च प्रमेहहेतुः कफकृच्च सर्वम्॥
(यो.र.प्रमेह.निदानम्)

मेदश्चमांसं च शरीरजं च क्लेदं कफो बस्तिगतः प्रदूष्य।
करोति मेहान्..... ॥(यो.र.प्रमेह.निदानम्)

Stages of the illness: a special reference The text *Vaidya sara sangraha* quotes 10 stages for Diabetes in succeeding order:

1. *Vasti bheda* (pricking pain in bladder)
2. *Murtra peedana* (pain during micturition)
3. *Vata prakopa* (features of aggravated *vata* in urine)
4. *Sannipata dosha prakopa* (multiple *dosha* involvement/tissue damage)
5. *Dhatu nasha* (tissue necrosis/systemic effect)
6. *Daha-moha* (burning and hallucination)
7. *Mootratisara* (severe urination)
8. *Mootra granthi/mootra sada* (dysuria or controlled urine)

9. *Ati trishna* (severe thirst) and

10. *Mrityu* (death)

About plant:

Salacia reticulata, a plant that grows in india and Sri Lanka, helps normalize blood sugar and insulin levels, and support healthy blood lipids. Traditionally used in *Ayurvedic* medicine to treat diabetes, more recently in has been used as a supplementary food in japan to prevent diabetes and obesity.[1] Below a detailed information of plant (*saptachakra*) have been described.

Saptachakra

Family : Celastraceae,

Latin name : *Salacia reticulate* Wight.,

SYN : *Salacia chinensis*

Sanskrit names :

- *Svarna mula*- The bark of the root is golden colored
- *Saptachakra, Saptakapi* - When the root is cut it shows 7 wheel like structures
- *Saptaranga*, - The fresh root exhibit different colors.
- *Vakramula, Ekanayagam.*

External Morphology:

- A shrub growing 6 to 12 cm. in height.
- Leaves with dentate borders and are asymmetrical.
- Flowers - greenish in colour.
- Fruits - orange coloured, 3 to 6 cm. long, oval in shape.
- Root externally golden coloured but in transverse section it emits rainbow colours.

Varieties : Several species have been reported as *Ekanayakam* some of the important ones are-

- *S.chinensis/S.prinoids/Casearae esculanta Roxb.*
- *S. oblonga*
- *S. macrosperma*
- *S. roxburghii*

Habitat : Southern Orissa, kerala, Malabar, other coastal and river bank area.

Properties

Rasa : *Kasaya, Tikta.*

Guna : *Laghu, Ruksha, Tikshna.*

Veerya : *Usna*

Vipak : *Katu*

Karma : *Kapha Pitta Shamak.*

Indication: *Madhumeha.*

Therapeutic use :

- *Saptachakra* is useful in *kapha vata* disorders.
- It also purifies *pitta.*
- Local application of root paste reduces the inflammation of piles.
- Being appetizer, digestive, laxative, hepatostimulant and cholagogue, it is useful in loss of appetite, liver enlargement, jaundice and piles.
- It reduces the blood disorders.
- It acts as rasayana in restoring the normalcy in diabetes and polyuria.
- It helps in reducing excessive sweating by emulsifying fatty tissue.

Parts used : Root Bark, Root

Dosage : Root powder - 1 to 29ms.;
Rasayana 0.5 to 1 gm;
Decoction - 3 to 6 gms.

Formulations : *Paranthyadi Tail, Himsagar Tail, Katakakhadiradi Kashaya.*

Action on *Dosha, Dhatu, Mala*

***Dosha* :** *Kaphaghna, vataghna, pitta* purification.

***Dhatu* :** *Rakta* (antidiabetic - hepatic stimulant), *meda* (metabolism), *rasayana.*

***Mala* :** *Mutra* (diabetes, polyuria).

Organs : *Rakta, meda*, urinary system.

***Saptachakra* in *madhumeha*:-**

- Salacia has potent antioxidant properties, and triglycerides and LDL cholesterol- lowering effects that aid in weight loss. It contains mangeferin, a poly phenol,which enhances the body sensitivity to the insulin and contains inhibitors of sugar digestion and absorption.[2]
- Salacia is also been found to inhibit aldose reductase, an enzyme that is normally present in eye and in other part of the body that helps change glucose into sugar alcohol called sorbitol. Too much sorbitol trapped in eye and nerve cells

can damage these cells, leading to neuropathy, retinopathy and cataract etc.

- In a detailed Study, the aqueous extract of the root bark showed a Significant hypoglyceamic activity in the streptozotacin- induced diabetes albino rats. The plasma glucose concentration was determined at regular intervals following administration. The drug was effective as a hypoglycaemic agent at all doses tested (0-5g/kg, Log/kg and 5-0g/kg). The maximum decrease in plasma glucose was observed between 1-5 hrs following administration of the drug. The maximum hypoglycaemic activity of 30% was observed 3 hrs ofter administration. (Karunanayake, 1984).
- Oral administration of S. reticulata powder to 20 NIDDM patients produced encouraging results (Kumar, 1990).
- In another clinical trial, 30 NIDDM patients were administered with S. reticulata root powder (2g twice daily for 60 days) and the results provided significant decrease in the plasma glucose levels (both FBS and PPBS) proving the potential anti-diabetic property 'of the herb (Leena Raman, 1997).
- Oral administration of ethyl acetate extract of 50 mg/kg body weight produced a significant hypoglycemic effect even after 24 hrs. There was also a slight gain/stabilization of the body weight in alloxan-induced rats after 30 days of treatment. Long term therapeutic effect as an oral anti-diabetic drug could be achieved even at 30 mg/kg dosage of ethyl acetate extract (Shekhar_et al; 2002).
- Recent studies indicate that S. reticulata contain a, diabetic principles with thiosugar sulforium sulphate structure vizl-salacinol and kotalnol which are alpha glucosidase inhibitors; They do not produce any side effects like hypoglycaemia. More over Salacia is found to possess TG and LDL cholesterol lowering effect resulting in weight loss as well (Gina Geslewitz- Supplement Industry Executive, 2002).,

Discussion: Inhibition of postprandial glucose: The intestinal ezymes, alpha-glucosidase and alpha-amylase break down starches, dextrins, maltose and sucrose into readily absorbable monosaccharides within the small intestine. Inhibition of these enzymes would cause delay in the absorption of glucose and help attenuate the postprandial glucose surges in diabetic individuals. This mechanism is currently being clinically used in alpha-glucosidase inhibitors like Acarbose.[3] Hiromi et al. reported another compound isolated from SR, a thiocyclitol in 2008. They measured the sucrase and maltase inhibitory activities of the aqueous extract by using maltose and sucrose as substrates in vitro. They demonstrated that this novel compound possessed more potent alpha glucosidase inhibitory effects compared to Salacinol.[4] They also compared the postprandial glucose levels of maltose and sucrose-loaded rats following the administration of Voglibose, Salacia extract, Salacinol, and the thiocyclitol compound. The results confirmed that maltase and sucrase is inhibited by all these compounds but the inhibitory activity is several times weaker than that of Voglibose.

Anti-obesity effects and Insulin resistance - Salacia species has been extensively studied for its anti-obesity effects as well. Pancreatic lipase activity is a critical enzyme for the digestion of dietary fat and hence believed to contribute towards weight reduction. Another species of Salacia, (S. oblonga) has been reported to possess lipid-lowering activity. Huang et al. in 2006 demonstrated that root extract of *Salacia oblonga* inhibited olive oil induced hypertriglycerdiaemia of rats.[5] Similary hot water extracts SR also suppressed pancreatic lipase activity

Generally, the mechanism responsible for reducing plasma glucose is believed to be inhibition of alpha glucosidase in the intestine by kotalanol and salacinol [13]. Although a mechanism to account for reduction of fasting glucose and glucose values following OGTT was not hitherto available, the decreasing insulin resistance (decrease of glucose and plasma insulin) in animal models on continued SR treatment demonstrated by *Shimada* et al. in 2014, [24] probably explains these findings. Serasinghe et al. and Kumara used a single point intervention and other mechanisms of glucose lowering needs to be considered to explain the results. They also point out that the extract was prepared in a manner similar to its *Ayurvedic* preparation used in diabetes for treating human subjects. However, some observations like the reduction of plasma glucose in treatment naïve fasted rats following SR

administration need to be explored in detail to elucidate other mechanisms of action.

Conclusions : The evidence available from animal and human studies point towards effective reduction of plasma glucose and weight in SR treated subjects. Alpha glucosidase inhibition is the most likely mechanism for the reduction of postprandial glucose. Reduction of fasting glucose, improvement in glucose handling following glucose loading and weight is most likely explained by decreased insulin resistance mediated through increasing adiponectin, suppression of lipogenesis and increased lipolysis.

Meticulously planned studies both animal and human, addressing the unresolved issues as well as studies that involve larger number of human subjects specifically addressing long-term outcomes and safety of SR treatment needs to be performed in the future.

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Pharmacological Review

Role of *Annona Squamosa* Leaf In Diabetes Mellitus

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Abstract:-

Diabetes mellitus is characterized by rise in blood sugar level resulting from insulin dysfunction or insulin insufficiency. The aim of the present investigation is to evaluate anti diabetic activity of *Annona squamosa* leaf in diabetes. Treatment with *A. squamosa* leaf cause significant reduction in blood serum glucose and serum lipid profiles like total cholesterol and triglycerides but significant increase in body weight and serum high density lipoproteins (HDL) level. pancreas of diabetic patient treated with *A. squamosa* also showed partial regeneration of beta cells. Thus, leaves of *A. squamosa* can be used as potential antidiabetic drug.

Keywords: *Annona squamosa*, antidiabetic drug,

सारांश–

मधुमेह एक ऐसा रोग है जिसका मुख्य लक्षण दोषपूर्ण इन्सुलिन स्त्राव, इन्सुलिन सक्रियता अथवा दोनों के कारण रक्त शर्करा की मात्रा में वृद्धि हाइपरग्लाइसिमिया होना होता है। वर्तमान शोध का उद्देश्य मधुमेह में एनोना स्क्वॉमोसा पत्तियों की मधुमेह पर कार्यशीलता का मूल्यांकन करना है। एनोना स्क्वॉमोसा की पत्तियां, टोटल कोलेस्ट्रॉल और ट्रायग्लिसराइड्स जैसे ब्लड सीरम ग्लूकोज और सीरम लिपिड प्रोफाइल में महत्वपूर्ण कमी लाती है, लेकिन शरीर के वजन और सीरम के उच्च घनत्व वाले लिपोप्रोटीन (एचडीएल) स्तर में महत्वपूर्ण वृद्धि दर्शाती है तथा मधुमेह रोगी का अग्न्याशय भी बीटा कोशिकाओं का आंशिक पुनर्जनन। इस प्रकार एनोना स्क्वॉमोसा की पत्तियों को संभावित एंटीबायटिक दवा के रूप में इस्तेमाल किया जा सकता है।

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manjisthja, haridra, rasona, jambu, methika, bimbi etc.

Introduction of *Annona squamosa* (Custard apple):

A scientific investigation of traditional herbal remedies for diabetes may provide valuable leads for the development of alternative drugs and therapeutic strategies. Alternatives are clearly needed because of the inability of current therapies to control all of the pathological aspects of diabetes, and the high cost and poor availability of current therapies for many rural populations, particularly in developing countries.

This review provides information of plants *Annona squamosa* reported to have been used to treat diabetes and/or investigated for antidiabetic activity, with a detailed review and great diversity of plant constituents with hypoglycemic activity, their mechanisms of action, potential toxicity problems, and promising directions for future research on anti diabetic plants.

The objective of this study is to provide a starting point for programs leading to the development of indigenous botanical resources as inexpensive sources for standardized crude or purified antidiabetic drugs, and for the discovery of lead compounds for novel hypoglycemic drug development.

The *Annona* genus (*Annonaceae*) consists of about 119 species, most of which are shrubs and trees widely distributed in the tropical and subtropical regions, including the Southeast Asia countries such as Malaysia, Indonesia, Thailand, Cambodia, Laos, and Vietnam. In Indian folk medicine, various species of Annona have been used as vermifuges, anti-inflammatory agents, in wound healing, as antimalarial agents and in the treatment of diarrhoea and dysentery.[5]

Pharmacognosy and pharmacology of *Annona squamosa:*

In various indigenous and traditional sources of medicine plants have been extensively used for treatments. Various parts of plants such as the leaves, fruits, the barks, roots and even the seeds are being used for prepration of medicine. *Annona squamosa* is also been extensively used as traditional medicine in various culture. The genus name, '*Annona*' is from the Latin word 'anon', meaning 'yearly produce', referring to the production of fruits of the various species in this genus. A. squamosa has been named botanically from Jamaica.[6]

The leaves of the plants have been used as styptic, insecticide, anthelmintic, externally used as suppurant. Unripe and dried Fruit work as antidysenteric. Bark is used as powerful astringent, antidysenteric and vermifuge. Rootbark, leaves and stems gave isoquinoline alkaloids. Powdered seeds are used to kill head-lice and fleas but care should be taken that the powder does not come in contact with the eyes as this causes great pain. Two acetogenins, annoreticuin and isoannoreticuin, isolated from the leaves, were found to be selectively cytotoxic to certain human tumours. The leaves and stems also gave alkaloids dopamine, salsolinol and coclaurine.[8]

Antidiabetic activity of Annona squamosa:

Study carried out on Annona squamosa have reviled that the plant posses antihyperglycemic effect. The study resulted that Oral administration of *A. squamosa* aqueous extract significantly reduced blood glucose, urea, uric acid and creatinine, but increased the activities of insulin, Cpeptide, albumin, albumin/globulin ratio and restored all marker enzymes to near control level.

Effect of *Annona squamosa* Leaf extract on diabetic wound:

The effects of Annona squamosa on the formation of glycosaminoglycans and collagen during wound healing.. After applied Annona squamosa extract topically. The granulation tissues formed were removed on the 8th day and the amount of glycosaminoglycans (GAGs) and collagen formed was evaluated .In vitro wound healing efficacy of A. squamosa in human dermal fibroblast culture (HDF) was also carried out. The fibroblasts treated with varying concentrations of A. squamosa were examined for proliferation and closure of the wound area and photographed.

A. squamosa increased cellular proliferation in HDF culture. The granulation tissues of treated wounds showed increased levels of

glycosaminoglycans (P<0.05) and collagen which were also confirmed by histopathology. The results strongly substantiate the beneficial effects of A. squamosa on the formation of glycosaminoglycans and collagen during wound healing.[9]

Effect on Fasting Blood Sugar Level: dose- dependent reduction in fasting blood sugar level after 28days of treatment.

Effect on Serum Total Cholesterol Level: reduction in serum total cholesterol level.

Effect on Serum Triglycerides Level: marked reduction in serum Triglycerides Level.

Effect of AS extract on serum High Density Lipoproteins level: significant elevation (P < 0.05) in serum HDL level after 28 days of treatment.

Effect on Body Weight: dose- dependent increase in the body weight of diabetic patients.[10]

Conclusion

The above findings revealed that the leaves of A. squamosa possesses potent anti diabetic and anti hyper lipidemic activities. Thus, it can be useful in the treatment of lipid abnormalities associated with diabetes mellitus. However, the exact mechanism of the anti diabetic and anti hyper lipidemic effects of AS extract is unknown. Hence, future studies are required to study its mechanism of action.

Flavonoids, saponins, acetagenins, alkaloids and phenolics are known to be bio active antidiabetic principles. The antidiabetic effect of Methanolic and Ethanolic extracts of seeds of *Annona squamosa*. may be due to the presence of more than one anti hyperglycemic principles mentioned above. Further pharmacological and biochemical investigation will clearly elucidate the mechanism of action and will be help full in projecting this plant as a therapeutic target in diabetic research.

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Pharmacological Review

Madhu (Honey): An Adoritous Remedy for Copious Malady - A Review

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Abstract

Ayurveda fundamental emphasized that proper combination of *aahara*, *vihar* and *oushadhi*are necessary tools to tackle numerous ailments. *Pathya*and *apathya* possess very important role in health maintenances, health promotions as well as in curative aspects and described elaborately in various *ayurveda* classics. *Madhu* is certain thing which is used as *ahara*, *oushadhi* and as well as *anupana*in various diseases in *ayurveda*. Due to its wide range of applicability and efficiency it has drawn attention of modern savants also. *Sushruta* mentioned *madhu* as *tridoshaghna*, specifically it has the property to subside the *kapha pitta* and*meda dathu*. It is used to overcome the ailments like*s was*, *kasa, hikka, chakshuroga* etc; but in present time it is more famousdue to its *vrana sodhan, ropana* activity. *Madhu* is active against almost 60 species of microorganism, has excellent anti-inflammatory and healing property. Anti-microbial action of *madhu* is mainly due to H_2O_2 activity. Contrary to popular believe, it is also efficient in *santarpana janya vyadhi* like *prameha* and *sthoulya*. Thus *madhu*alone incorporates the properties which can do wonder.

Key wards: *Ayurveda, Madhu,* Anti-microbial*, Vrana*.

सारांश–

आयुर्वेद के मूलभूत सिद्धान्तों में बल दिया गया है कि–आहार विहार व औषधि का उचित समन्वय कई विकारों के शमन हेतु आवश्यक उपकरण हैं। पथ्य व अपथ्य स्वास्थ्य रक्षण, स्वास्थ्य संवर्द्धन के साथ ही रोग निवारण में भी महत्वपूर्ण अधिकारात्मक भूमिका निभाते हैं। साथ ही इनका (पथ्य व अपथ्य) आयुर्वेदीय साहित्य में विस्तृत विवरण किया गया हैं। मधु भी इनमे से है जिसका प्रयोग आयुर्वेद में आहार, औषधि के साथ–साथ विभिन्न व्याधियों के अनुपान के रुप में किया गया हैं। इसने अपनी उपयोगिता के विस्तृत स्वरुप व क्षमता के कारण से आधुनिक विद्वानों का ध्यान भी आकर्षित किया है। आचार्य सुश्रुत ने मधु को त्रिदोषघ्न वर्णित किया है जो विशेष रुप से कफ पित्त शामक मेदो धातुशामक गुण धर्म रखता है। यह श्वास, कास, हिक्का व चक्षुरोगों के परिप्रेक्ष्य में हमेशा से प्रयोग किया जाता रहा है परन्तु वर्तमान समय में यह अपने व्रणशोधन ,रोपण प्रभाव के कारण से प्रसिद्ध है। यह सूक्ष्म जीवों की लगभग 60 प्रजातियों के विरुद्ध प्रभावी है, जो शोथनाशक व व्रणरोपण गुणधर्म रखता है। इसका रोगाणुरोधी प्रभाव मुख्य रुप से इसकी H_2O_2 क्रियाशीलता के कारण से है। आम धारणा के विपरीत यह सन्तर्पण जन्य व्याधियों प्रमेह, स्थौल्य के विरुद्ध भी प्रभावी है। इस प्रकार मधु अकेला यह गुण रखता है जो कि आश्चर्य कर सकता है।

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Pharmacological Review

Madhu (Honey): An Adoritous Remedy for Copious Malady - A Review

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Introduction

Madhu is viscid; jelly like sweet substance and was used by people of India as well as other parts of world from very ancient time. People used *madhu* even 8000 years ago as documented by a cave painting in Valencia, Spain[1]. A wide range of use and efficiency of *madhu* also been mentioned in ancient *ayurveda* classics. *Madhu* is subjected to daily intake (*nitya sevaniya*)[2] and also has various medicinal use, internally as well as externally, either as ingredient or as *anupana* of medicine. It is used in various auspicious occasions also. *Madhu* used in *hridayaroga, netra roga, medo vriddhi, premeha*; it is *vajikarak, bhagnasthi sandhankar, vranaropak*. Natural *madhu* contains almost two hundred substances[3] and primarily composed of glucose, fructose, various amino acid, vitamins, minerals and enzymes. In *ayurveda*, *madhu* is used in *sthaulya* and *prameha* although it contains *madhur rasa*. *Varsa ritu* is the *sancaya kala* of *vatadosha and madhu* is *vata vardhak,* despite this fact various *Ayurveda* classics advocated for uses of *madhu* with food and water before consumption in *varsa ritu*. Contrariety of action, wide range of therapeutic index, huge contains etc. has drawn special attention of modern savant and has been subjected to numerous laboratory and clinical researches. Antibacterial, anti-inflammatory, antioxidant, cardio protective etc. action of *madhu* has been proved in modern parameter. Here an attempt has been made to explore various uses of *madhu*. The main aim and objective of the article is to search the benefit of *madhu* and justification behind its use.

Religious significant:-

In Hinduism, *madhu* is included in *panchamrita* along with milk, *dadhi,* ghee and *sarkara*. *Madhu* considered as auspicious. In *Madhu abhisheka,* a Hindu ritual *madhu* is poured over deities[4]. *Madhu* plays an important role in *Madhu purnima* a ritual of Buddhist. Remembering an auspicious incidence, Buddhist offers *madhu* to the monks in *madhupurnima*[5]. In Islam, there is an entire *Surah* in the Qur'an called *al-Nahal* i.e. the Honey Bee. The Qur'an promotes *madhu* as healthy and nutritious diet. According to *hadith*, Prophet Muhammad recommended *madhu* for healing. In *jewish* tradition, apple slices are dipped in *madhu* and eaten to bring a sweet new year, Rosh Hashanah[6].

Composition of *madhu*:-

Madhu is viscid, jelly like sweetener produced by honey bee from nectar of flowers and secretion of plants, by a process of regurgitation and evaporation and stores primarily in wax honeycombs inside the beehive. The compositions of *madhu* are variable and primarily depend upon floral source and type of bees. Natural *madhu* contains almost two hundred substances and primarily composed of glucose, fructose, various amino acid, vitamins, minerals and enzymes. Among all these sugar and water are the main compositions. Fructose and glucose are the two main source of carbohydrate and accounts almost 85% to 95% of total sugar and readily absorbs from intestine[7]. *Madhu* contains 4% to 5% fructo oligosaccharides and few oligosaccharides. It also contains disaccharides like sucrose, maltose, nigerose, meli-biose, panose, maltotriose, melezitoseetc.[8]Water is the second most major component of *madhu*. It also contains many kinds of acids both organic and amino acid. The aromatic acids, such as malic acid, come mostly from the flowers, adding to the aroma and taste of the honey. Honey can contain up to 18 of the 20 amino acids, however amino acid content is almost negligible in *madhu*. Amino acids are derived almost solely from the bodies of the bees. Organic acids comprise most of the acids in *madhu*, accounting 0.57% of the mixture, and among them Gluconic acid is the most prevalent[9]. It also contains some minerals and trace elements like potassium, calcium,

magnesium, sodium, zinc, iron, copper, phosphorus, sulphur, manganese. It contains Vitamin B1, B2, B6, Vitamin C and nicotinic acid in traces[10]. A variety of enzymes such as oxidase, invertase, amylase, catalase, etc. are also present in *madhu*.

Property and general use in *Ayurveda*:

Generally it is of *madhur*, *kasaya rasa*, *ruksha guna* and *sheeta veerya*[11]. According to *caraka* it is *kapha and rakta-pitta shamaka, vata vardhak*[12]. According to *sushruta* it is *tridosha nashaka*[13]. Newly obtained *madhu* is *saraka* and possess *vrimhana* property whereas an old *madhu* is *grahi* and possess excellent *lekhana* property[14].

In *ayurveda madhu* is used in various types of *netra roga, swas, kasa, atisara, prameha, visa vikar,* and *hiccough*. It is also indicated in *trishna, krimi, vamana* and *vrana*[15,16]*Madhu* annihilates *kapha dosha* and poses *lekhana* property and also used in *rakta pitta* and *kustha*[17]. Beside these *madhu* is beneficial for *hridaya roga* and *medovriddhi*; it is *vajikarak, bhagnasthi sandhankar*[18]also.

Types of *madhu* and specific uses:

Honey bees' collects nectar and plants secretion and transform it as *madhu*. It is believed that the medicinal property of the plant is transmitted into *madhu*. Depending upon the collecting source *madhu* are of various coloured and poses different medicinal property although there is a base line similarity of therapeutic activity. Depending upon the origin, *madhu* has been broadly classified in four groups in present day's namely as a) blossom honey *(madhu)*, b) honeydew honey *(madhu)*, c) monofloral honey *(madhu)*, and d) multifloral hone *(madhu)*.[19]

Table No:1 Scientific name and taxonomy

Acharyas of *Ayurveda* made classification of *madhu* depending upon the type *madhu* collecting bees. Despite the baseline similarity in medicinal property, every type of *madhu* is indicated for specific disease. The variety of *madhu* and their specific indication according to *ayurveda* are as follows-

Acharya Charaka has mentioned its four varieties named as (a) *makshik*, (b) *bhramar*, (c) *kshudra* and (d) *pauttik*[20].

Acarya sushruta and *bhavamishra* mentioned its eight varieties i.e. (a) *pauttik,* (b) *bhramar,* (c) *kshudra,* (d) *makshik,* (e) *chattra*, (f) *aardha*, (g) *auddhalak and (h) daal*[21].

***Makshika*:** Among all variety *makshika* variety is best. Colour of *makshikamadhu* resembles with colour of oil and beneficial for *chakshu roga*, *kamala arsha, swas, kasa etc*[22].

Bhramar: It is of crystal colour and guru *prakriti.* It is used to pacify *raktapitta*[23].

Kshudra: It is of white colour. Indication for use is similar like that of*makshika* variety but it is specially indicated in *prameha*[24].

Pauttik: it is *ruksha, usna;* causes *daha,* aggravates*rakta* and *pitta-vata*. Its colour resemble with ghee. This variety of *modhu* pacifies *prameha*, *mutrakriccha and heals ulcer*[25].

Chattra: This variety of *modhu* is of *kapil* or *peeta varna*. It pacifies *krimi, sweata kustha, raktapitta, prameha, vhrama, trishna, moha* and *visa*[26].

Aardha: This variety *of madhu* is beneficial for *chakshu* and used in *kapha-pitta* disorder. This is of *kasaya-tikta rasa,katu vipaka* and increases body strength[27].

Auddhalak: This kind of *madhu* increases test sensation and beneficial for good voice. It consists of *amla-kasaya rasa*, *usna* and *katu vipaka*. It aggravates *pitta*[28].

Daal: This variety of *madhu* has *vrimhana* property and used in *vamana* and *prameha*. It also increases *agni,* pacifies *kapha,* increases test sensation[29].

***Madhu* for *sodhana* and *ropana* (anti-microbial, anti-inflammatory and healing property)-**

Much more discussion is going on now a day's regarding enjoined adroitness of *madhu,* specially itsadmirable *vrana sodhana* (antimicrobial) and *ropan* (healing) property. Several researches has been conducted regarding antimicrobial activities and wound healing properties of *madhu*, and researches show that *madhu* is active against almost

60 varieties of microbes[30]. *Madhu* acts as antimicrobial in various ways and the ways are to some extent different from antimicrobial used in allopathic medicine. When *madhu* used over *vrana* (wound), it becomes diluted by body fluid and releases hydrogen peroxide, which acts as antiseptic[31]. The relatively low ph (3.2 to 4.5) helps to arrest the growth of many microorganisms. Further the hygroscopic nature of *madhu* draws water and dehydrates the micro-organism[32]. Hygroscopic nature of *madhu* aids wound to get heal in moist condition which in turn prevents formation of scar. In addition, lysozyme which is known for antimicrobial activity also present in *madhu* may be responsible for antimicrobial activity of *madhu* also[33]. Besides the *vrana sodhana*(antiseptic*)*, *madhu* are used for *vranaropana*(healing) also. *Madhu* is used to heal all type of wound (*vrana*) includes abrasion, abscess, amputation, burns, burst abdominal wound, cracked nipples, fistulas, diabetic, malignant, leprosy, traumatic, varicose ulcer, septic wounds, surgical wound[34], although the exact mechanism of wound healing in molecular level is not well known. After application of *madhu* over wounds, it rapidly clears the wound (*vrana*) due to its osmotic outflow, which helps in lifting dirt and debris from wound (*vrana*) surface[35]. Application of *madhu* also causes reduction of inflammation and *madhu* stimulates tissue regeneration also. Beside this presence of wide range of amino acids, vitamins and trace elements presents in *madhu* provides nutrition to regenerating tissue. When *madhu* used in burn, initially it causes soothing effects and later promotes healing process, sterilizes wound (*vrana*) and reduces pain.

Enormous uses of *madhu* in various type of *vrana* are documented in various *ayurveda* classics. *Sushrutacharya,* in first chapter of *chikitsa sthana* mentioned uses of *madhu* along with *ghee* inallkind of *vrana* arising due to external injury[36]. In the same chapter *acharya* further mentioned the use of *madhu* with *tilkalka* for non-healing*vrana*[37] and uses of *madhu* with *kaseesadi* oil to normalise the elevated *vrana*[38]. *Madhu*, along with *tilakalka* and *ghee* are used for healthy healing after *sastrakarma*[39] and *ghee* and *madhu* were used in *samyakdagdha* after therapeutic *agnikarma*[40]. *Madhu* has shown highly effective in the treatment of gingivitis and periodontal diseases[41].

The antimicrobial activities of *madhu* were used to disinfectant food article also. The increased humidity in nature provides suitable ambience for growth of micro-organisms which in turn causes fermentation of food stuff. According to *acarya caraka* and *sushruta*, *madhu* should be mixed with food and water before consumption in *varsa ritu*[42,43], despite the facts that *varsa ritu* is the *sancaya kala* of *vatadosha and according to acarya caraka*, *madhu* is *vata vardhak*. The anti-microbial activity of *madhu* is the main reason behind such advice, in addition*acarya sushruta* mentioned *madhu* as *Tridosha shamak*.

***Madhu in atisara* and *vamana* (G.I.Disorder)**:

Madhu is highly effective against many microorganisms which causes gastrointestinal infection. Attachment of the microorganisms in the intestinal mucosa is the basic requirement for disease production and *madhu* block this basic adherent process by coating over the organism or by some other process or kills the organism and prevents diseases[44]. Further study shows that administration of rehydration fluid mixed with *madhu* facilitates potassium and water uptake without increases sodium uptake. It also helps in repairing damaged intestinal mucosa by stimulating the growth of new tissues and minimised the inflammation.A prospective controlled clinical trial of 169 children and infant suffering from gastroenteritis by using routine management for one group and using honey (*madhu*) in other group was conducted by I E Haffejee et al and A Moosa et al. Result shows that honey (*madhu*) used with oral rehydration solution shorten the duration of bacterial diarrhoea[45]. As it facilitates water uptake, it poses anti-microbial and anti-inflammatory property hence it is also helpful in vomiting (*vamana*).

***Madhu* in *bhagna* (fracture)**:

The enzyme glucose oxidase produces hydrogen peroxide along with gluconic acid from glucose which helps in calcium absorption[46]. Presence of calcium and other minerals helps easy reunion of broken bones thus it is *bhagnasthisandhankar*.

***Madhu* in *prameha* (diabetes) and *sthaulya* (obesity)**:

Glucose and fructose, the main carbohydrate present in *madhu*, has same molecular but different structural formula. Evidence suggests that in the presence of glucose, (the 2nd major component of *madhu*) the intestinal uptake of fructose increases. Research shows that fructose decrease gastric emptiness, reduce glucose uptake from gut and fructose consumption reduce food intake[47]. Further oligosaccharide like palatinose presents in *madhu*, causes delayed digestion and reduce intestinal absorption of glucose and reduces glycemia[48]. Moreover, the reduced food intake by the influence of fructose also reduces the weight gain. *Madhu* reduces body weight gain via regulation of appetite regulating hormones like leptine, peptide YY and ghrelin[49]. *Madhu* reduces the digestion and absorption of protein and increases faecal nitrogen output, which is probably the cause of reduction of body weight[50].

According to*ayurveda*, the factors which increase *kapha, meda* and *mutra* are also the *nidana* of *prameha*[51]. *Meda* and *kapha* are mainly vitiated in this disease. *Madhu* is of *madhura* rasa and hence should be contraindicated in *santarpan janya vyadhi* like *prameha* and *sthaulya*. But on the other hand *madhu* specially annihilate *meda* and *kapha dosha* due to its *ruksha guna, kasaya rasa* and indicated in *prameha*. There are several *yogas* mentioned in *ayurveda* classic containing *madhu* which are indicated in *prameha*. Not only as medicine, even *madhu* or *madhu* mixed water is indicated in *prameha* as diet or as drink also[52]. For the same cause *madhu* is also helpful in the treatment of *sthaulya*.

***Madhu* in *Hradaya Roga* (cardiac diseases)**-

Madhu poses strong antioxidant activity. Antioxidant activity is responsible for prevention of various acute and chronic disorders like inflammatory, cardiac disorder etc. Flavonoids, a group of phenolic acids are presents in the *madhu* which are mainly responsible for the antioxidant activity of *madhu*. Flavonoids are known for inhibition of low density lipoprotein oxidation through both free radical scavenging and metal chelating, and phenolic acid acts by free radical tapping mechanism[53].

Reactive oxygen species (ROS) are highly reactive molecules and are produced at low levels in normal physiological conditions and necessary for maintaining normal cell functions also. But excessive generation of ROS known as a state of oxidative stress and acts as risk factor for several cardiovascular diseases. Various studies have shown that regular flavonoid intake reduces risk of cardiovascular diseases. Flavonoids improves coronary vasodilatation, prevents LDLs from oxidizing, which plays an important role in the development of atherosclerosis and decreasing the ability of platelets in the blood to clot and hence reduces the chance of coronary heart diseases[54]. In *Ayurveda*, atherosclerosis and related cardiac problem are considered as *santarpanjanya vyadhi*; *meda kapha nashaka rukshadravya* and *aahar* are indicated in this *vyadhi*. Furthermore, over weight and poor control of glycaemia act as risk factor in various cardiac problems; as *madhu* shows better ability to control above mentioned both health problems hence also helpful in various cardiac disorders.

In a double group control study conducted over 55 samples, 38 subjects who received 70 grams natural *madhu* for 30 days showed that *madhu* caused a mild reduction in body weight (1.3%) and body fat (1.1%). *Madhu* reduced total cholesterol (3%), LDL-C (5.8), triacylglycerole (11%), FBG (4.2%), and CRP (3.2%), and increased HDL-C (3.3%) in subjects with normal values, while in patients with elevated variables, *madhu* caused reduction in total cholesterol by 3.3%, LDL-C by 4.3%, triacylglycerole by 19%, and CRP by 3.3% ($p < 0.05$) and concluded that consumption of natural *madhu* reduces cardiovascular risk factors, particularly in subjects with elevated risk factors, and it does not increase body weight in overweight or obese subjects[55].

***Madhu* in *hikka*, *swas* and *kasa*:**

Madhu is used extensively as household remedy in *swas* and *kasa roga*. According to *ayurveda, kapha* does play vital role in *swas roga utpatti*. When the way of *vata dosha* becomes obstructed by *kapha dosha* and *vata dosha* becomes dissipate and got vitiated, then already vitiated *vata dosha* causes vitiation of *prana vaha, udaka vaha* and *anna vaha srotas* and *swas roga* arises[56]. The

utpatti sthan of *hikka* and *swas roga* is *pitta sthan* and *kapha dosha* annihilation is basic priority to treat these diseases. *Madhu* has excellent *kapha* annihilating property hence used in *swas roga*. According to allopathic medical science microorganism plays a dominant role in *swas* and *kasa roga. Madhu* is active against almost 60 species of microorganism and hence useful in these diseases. A clinical study shows positive results in asthma patients, treated with nebulisation by *madhu*. 300 children and infants mean aged 2.49 ± 3.02 years suffering from mild to moderate asthma were included in the study. 30 minutes nebulisation was conducted. Results were obtained after 60 minutes. The dyspnoea improved in 94% of patients. The chest wheezes disappeared in 35% and decreased significantly in 31% of patients. Six (6) patients showed persistence of symptoms. Improvement in frequency of productive cough occurred in 78.7% during and after nebulisation[57].

***Rasayana* and *vajikarana*:**

A good complexion, clear skin, easy and smooth coordinated body movement, a body well clothed with firm flesh, intact all special sense organ etc. are the physical dimension of health according to world health organisation[58]. According to *ayurveda* all these facility along with disease free long life and delayed ageing are the beneficial effect of daily *rasayana* intake. Daily intake of *rasayana* causes proper development of *rasa, rakta*etc. *dhatu*[59]. Studies shows that regular and adequate intake of antioxidant helps to maintain proper cell and tissue function, healthy muscular activity, increases health status and longevity[60]. There are huge similarity between the effect of daily intake of antioxidant and regularly intake of *rasayana* in proper way. There is considerable number of *rasayana yoga* mentioned in various *ayurveda* classic which contains *madhu* along with other herbs. The *rasayana yoga* along with *madhu* and antioxidants shows similar kind of efficacy; both helps to live disease free long life and delayed ageing. As *rasayana yoga* produces commended*dhatus* like *rasa, rakta* including *sukra*, hence it is clear that all these *yoga* also acts as *vajikarana*. Animal study has shown positive results on spermatogenesis and positive increment of vaginal wall epithelium and muscle thickness in *madhu* treated ovariectomised rats[61]. In another study, intra vaginal use of *madhu* in asthenozoospermia patients for consecutive three cycles shows significantly better result (8.1% pregnancy per cycle) than artificial insemination (2.6% pregnancy per cycle)[62].

Other use of *madhu*:

Madhu is used in a vast number of *chakshu roga*. The main apprehensive factor for *chakshu roga* is *kapha dosha*[63] and *madhu* is excellent *kapha shamak* due to *kasaya* rasa and *ruksha guna*. Due to *sukshma guna* and *yogavahi* nature it gives nutrition to eye through micro circulation. In *chakshu roga,madhu* is useful due to its antioxidants, antimicrobial and healing property. *Madhu* is used in *timir roga* due to its antioxidant activity; it is used in *pakshmoparodha* after *sastrakarma* with ghee for better healing. *Madhu* also used for *anjan karma* in *siraharsha, sirotpat* and *raktabhisandya* etc. diseases due to its anti-inflammatory action. In *arjuna* also, *parisheka, aschoyatana* and *anjana* of *madhu* with other herbs advised due to healing property of *madhu* as ulcer appears in this disease.

Madhu is used in *arsha, bhagandara, nadivrana* and *kustha roga* due to its anti-inflammatory, antimicrobial and healing property. *Madhu* also used after *karnasandhana* and *nasa sandhana* for dressing as well as in *karnasrava roga* due to its antimicrobial and healing property. It isalso used in *pandu, kamala, gulma, jvar, nasararbud, apasmar, krimi, visa* and *raktapitta* roga.

Contraindication:

Despite the admirable beneficial effects, there are some contraindications of intake of *madhu*. *Madhu* shows incompatible action when it is taken with some specific herbs and certain condition. In this condition *madhu* acts like *visa*, it causes certain health disorder and even instantaneous death.

Meat of domestic, marshy and aquatic animals should not be taken together with *madhu*[64,65]. It may causes deafness, blindness, trembling, loss of intelligence, loss of voice and even death[66]. Vegetable of *puskara* and *rohini* or meat of *kapota* fried with mustard oil should not be taken together with milk and *madhu* as it may precipitate blood vessel dilatation, *apasmara, sankhaka,*

galaganda, rohini and even death. Leaves of *jatuka*[67,68]or ripe fruit of *nikuca* should not be taken with milk and *madhu* as it may cause loss of strength, complexion and semen. Meat of *haridraka* roasted or burned with turmeric wood and mixed with *madhu* causes instant death. *Pippali* or *marich*, prepared with fish fat and *kakamaci,* mixed with *madhu* also causes death. Same fate occurs after intake of hot *madhu* or ingestion of *madhu* by person, afflicted with heat[69] or in hot season[70]. Equal quantity of *madhu* and ghee or rain water[71,72]intake of hot water after ingestion of *madhu*[73,74] also considered as *viruddha* and hence contraindicated for intake. According to *sushruta,madhu* with radish or with pork also considered as *viruddha*[7] and hence better to avoid.

Discussion:

There are almost 300 types of *madhu* available in market throughout the world[76]. In *ayurveda* classics *madhu* is used mainly as *anupana*, as ingredient of medicinal *yoga* and also as *aahar* in some context. *Madhu* has been described under daily permissible *aahar*.The basic components of *madhu* are sugar and water; and among sugar, fructose and glucose are main. Besides this, it also contains numerous amino acids, vitamins and minerals. Wide range of therapeutic index made *madhu* a special remedy in the field of medical science. From the period of ancient *ayurveda* it is used specially as *vrana sodhaka* and *vranaropak* medicine. Its admirable antimicrobial, anti-inflammatory and tremendous healing power has been proved in modern parameter. *Madhu* is active against almost 60 species of microbes including several drug resistance organisms. Uses of *madhu* during and after *sastrakarma* have been documented in several occasions in *Ayurveda* classics. *Madhu* is also used in *swas, kasa, atisara* and *vamana*. Basically *madhu* is used in these diseases due to its antimicrobial action. Studies show that, *madhu* containing rehydration fluid facilitated water and potassium uptake and easy healing of ulcerated intestinal mucosa. Contradictory to normal believes, *madhu* plays important role to control glycaemia and reduction of body weight, Fructose, a content of madhu helps to attain these two goals. *Meda* and *kapha* are mainly vitiated in this disease. *Madhu* annihilates *meda* and *kapha dosha* due to its *ruksha guna, kasaya rasa* and indicated in *prameha* and *sthaulya*. These two diseases are risk factor for cardiac disease; hence *madhu* is also useful in cardiac disease. Furthermore *madhu* reduces total cholesterol and LDL cholesterol, whereas it increases HDL cholesterol and proven beneficial to control the risk factors of *hridaya roga*. Moreover antioxidant property of *madhu* is responsible for its cardio protective and *rasayana* activity. A wide number of eye remedy contains *madhu* or *madhu* with ghee along with other herbs used in *Ayurveda* treatment. *Madhu* is beneficial in various eye disorders due to its antioxidant, anti-inflammatory and anti-microbial action. The main apprehensive factor for *chakshu roga* is *kapha dosha* and *madhu* is excellent *kapha samak* due to *kasaya* rasa and *ruksha guna*. Further it contains vitamin c, popularly known as eye antioxidants. In addition of this, *madhu* is *yogavyahi*and poses *sukshma guna*so nutrient effects of ghee and others herb circulated by *madhu* through micro circulation. But despite of marvellous beneficial effect, *madhu* is contraindicated in some condition and with combination of some herbs. So caution should be taken during the use of *madhu*.

Conclusion

In *Ayurveda, madhu* is used in various systemic diseases as food, as medicine or as *anupana*. Due to wide range of action it has drawn the attention of modern savants and extensive research already conducted and also continuing. Justification of its use in *prameha, sthaulya, hridayaroga, chakshu roga, swas, kasa, hikka*etc mentioned in various *ayurveda* classic has been proved in modern research parameter. Stunning *vrana sodhana* and *ropana* property of *madhu* is a matter of strange of researcher now a days, several researches have been conducted and the number is increasing day by day. Truly single *madhu* is competent weapon for fight against variety of diseases.

Table No: 1 Scientific name and taxonomy-

Category-	**Bee, Ant, Wasp and similar**
Common name-	**Honey Bee**
Scientific name-	**Apis mellifera**
Kingdom-	**Animalia**
Phylum-	**Arthropoda**
Class-	**Insecta**
Order-	**Hymenoptera**
Family-	**Apidae**
Genus-	**Apis**

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Analytical Study

Analytical Screening Of *Rubia cordifolia* & *Curcuma longa* With Special Reference To Diabetes Mellitus (*Madhumeha*)

*Dr.Gulab Chand Meena, **Dr. L. N. Sharma, ***Dr. Rajendra Prasad purvia

Abstract:-

Diabetes mellitus is a growing health hazard in developing countries. It is the most common metabolic disorder. As a psychosomatic disease and due to most dangerous complication, diabetes mellitus has grabbed the attention of health community all over the world. Today more than 20 million people of the world are suffering from the disease Diabetes mellitus. *Ayurveda* described diabetes mellitus (DM) as *Madhumeha*. *Ayurveda* has an upper hand in treating and preventing Diabetes Mellitus effectively. This oldest medical science has numerous formulations in its belly which have been time tested for their efficacy and outstanding results. Among many herbs known for their anti-diabetic properties, *Haridra* (*Curcuma longa*) & *Manjishta* (*Rubia cordifolia)* stands the leaders. These are also considered as a drug of choice in the treatment of *Madhumeha* (*Diabetes Mellitus*). In the treatment of Diabetes, *Haridra* and *Manjishta* is excellent option both as a preventive and curative agent.

Keywords:- Psychosomatic, *Madhumeha,* Haridra, *Manjishta*

सारांश–

मधुमेह रोग एक आम चयापचय विकार है तथा इसका खतरा लगातार बढ़ रहा है। मनोदैहिक बीमारी के कारण और गंभीर दुष्परिणामों के कारण, मधुमेह (डायबिटीज मेलेटस) ने पूरे विश्व में स्वास्थ्य समुदाय का ध्यान आकर्षित किया है। आज विश्व के 20 मिलियन से अधिक लोग इस बीमारी से पीड़ित हैं। मधुमेह (डायबिटीज मेलेटस) आयुर्वेद में मधुमेह के रूप में वर्णित है। मधुमेह का प्रभावी ढंग से उपचार और रोकथाम में आयुर्वेद का बड़ा हाथ है। यह सबसे पुराना चिकित्सा विज्ञान हैं, जो कि प्रभावकारिता और उत्कृष्ट परिणामों के लिए जाना जाता है। मधुमेह के लिए प्रयुक्त कई औषधियों में, हरिद्रा (कुर्कुमा लोंगा) और मंजिष्ठा (रुबिया कॉर्डिफ़ोलिया) प्रभावी है। हरिद्रा और मंजिष्ठा मधुमेह के रोकथाम एवं उपचार में उत्कृष्ट विकल्प हैं।

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Analytical Screening Of *Rubia cordifolia* & *Curcuma longa* With Special Reference To Diabetes Mellitus (*Madhumeha*)

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Introduction:-

Diabetes mellitus is a growing health hazard in developing countries. It is the most common metabolic disorder. Today more than 20 million people of the world are suffering from the disease Diabetes mellitus. As a psychosomatic disease and due to most dangerous complication, diabetes mellitus has grabbed the attention of health community all over the world. Non communicable diseases like diabetes mellitus have already overtaken communicable diseases in term of mortality and morbidity. Non communicable diseases lead to major economic threats to developing countries and can marked impact on the quality of life of affected individuals. According to etiological factors, clinical features and pathogenesis, it is very clear that Diabetes Mellitus is being correlated with *Madhumeha* in *Ayurveda* system of medicine. *Ayurveda* has a lot to offer in the management of *Madhumeha*. *Ayurveda* has an upper hand in treating and preventing Diabetes Mellitus effectively. This oldest medical science has numerous formulations in its belly which have been time tested for their efficacy and outstanding results. Present time find out an efficacious remedy to co-fight the challenges of diabetes and reduce human sufferings. Ancient Indian medicines mention various plants and its formulation the treatment of diabetes mellitus. Many herbs known for their anti-diabetic properties, *Haridra* (Curcuma longa) & *Manjishta* (Rubia cordifolia) stands the leaders. These are also considered as a drug of choice in the treatment of *Madhumeha* (Diabetes Mellitus). In the treatment of Diabetes, *Haridra* and *Manjishta* is excellent option both as a preventive and curative agent. *Ayurveda* in changing outline of diabetes management for developing safe and effective treatment. Many medicinal plants are used in practice. It is an attempt to collect references and important information ragarding *Rubia cordifolia* & *Curcuma longa* wsr to *Madhumeha*.

Description of drugs with their classical text book and experimental/clinical study references:-

***Rubia cordifolia* (*Manjishta*):-**

Botanical name – *Rubia cordifolia*

Family – Rubiaceae

Manjishta is a famous herb for blood detoxifying. It is called as Indian Madder in English.

Classical categorization:

Charaka samhita –

Jvarahara – herbs that relieve fever

Varnya – herbs that are good for skin, improves complexion

Vishaghna – anti toxic, anti poisonous herbs

Sushruta – *Priyangvadi* and *Pittasamshamana* (*Pitta* calming) group of herbs

Vagbhata – *Priyangvadi* group of herbs

Rubia cordifolia medicinal qualities:

Guna (qualities) – *Guru* (Heavy to digest), *Rooksha* (dry)

Rasa – *Tikta* (bitter), *Kashaya* (astringent), *Madhura* (sweet)

Vipaka (taste conversion after digestion) – *Katu* (pungent)

Veerya (potency) – *Ushna* (hot)

Effect on *Tridosha* – *Kaphapittashamaka* – Balances *Kapha* and *Pitta*- It is mainly *Pittahara*. Because it mitigates *Pitta*, it is useful in diseases of the tissues where *Pitta* is involved. Such as skin (wounds, skin diseases) and eyes. *Meha* – diabetes and urinary tract disorders.

Part used: Root[1]

Experimental/clinical studies:-

Rubia cordifolia Linn. (Rubiaceae), also

known as '*Manjistha*', is an important medicinal plant and is used for treatment of various ailments like diabetes, cancer etc.. Anti-hyperglycemic and antioxidant properties of the roots of Rubia cordifolia Linn. have been reported earlier[2]. while aerial parts of the plant also show hypoglycemic effect[3]. The importance of decreasing Advanced glycation end products (AGEs) accumulation as a potential therapeutic target in diabetic nephropathy has been clearly demonstrated by experimental studies using a range of inhibitors of advanced glycation.[4,5]

Antiglycation, Antioxidant and Antidiabetic Activity of Traditional Medicinal Plant:Rubia Cordifolia Linn. For Management Of Hyperglycemia- In this study demonstrated the anti-diabetic potential of Rubia cordifolia along with a significant antiglycation and antioxidant activity indicating its potential to be used as an antidiabetic drug for management of hyperglycemia[6].

Antihyperglycemic Activity of Aqueous Root Extract of *Rubia cordifolia*. in Streptozotocin-Induced Diabetic Rats[7].

Hypoglycaemic Activity Of Roots Of Rubia Cordifolia In Normal And Diabetic Rats-Thus, it is concluded that, alcoholic extract of R. cordifolia reduced blood glucose in normal and diabetic rats, improved glucose tolerance and potentiated insulin effect. This suggests that the extract may stimulate the ? - cells of the pancreas to release the insulin, which is similar to that of sulfonylureas. Further pharmacological and biochemical investigations are underway to elucidate the mechanism of the antidiabetic effect of R. cordifolia root extracts[8].

The antidiabetic action of *Rubia cordifolia* Linn aqueous root extract (RCAREt) was examined in streptozotocin (STZ)- induced diabetic rat model. Serum glucose, total cholesterol and triglycerides, haematological parameters, and liver and kidney transaminases in normal, STZ diabetic, and RCAREt-treated diabetic rats were measured. The observed hyperglycaemia, hypertriglycaeridemia, enhanced transaminases of liver and kidney, hypochromic microcytic anemia, and loss of body weight in STZ diabetic rats were normalized by RCAREt treatment, whereas the hypercholesterolemia was not rectified. These results suggest the antihyperglycaemic potential of Rubia cordifolia aqueous root extract and the beneficial effect of RCAREt treatment might be due to different types of active principles, each with a single or a diverse range of biological activities[9].

The aqueous extract of *Manjistha* roots also has good anti-hyperglycemic action. It is likely to decrease blood glucose level. In addition, it also exerts antioxidant action. It has antipruritic action, increases healing time in wounds, so it is also good for diabetic patients having ulcers or open wounds.

5 Active Constituents Rubia Cordifolia in BGR-34, which are identified and studied for anti-diabetic effects-

Phytochemicals	Action
Rubiadin	Potentiates insulin effect due to increases peripheral utilization of glucose
Purpurin	Strong Antioxidant action
Xanthopurin	Strong Antioxidant action
Manjistin	Immuno potentiating effect
Pseudopurin	Immuno potentiating effect [10].

***Curcuma longa* (*Haridra*):-**

Botanical name – *Curcuma longa* (Curcuma domestica val)

Family- Zingiberaceae

English Name- Turmeric

Classical Categorization: Charaka –

Lekhaneeya Gana – group of herbs having scraping property.

Kushtaghna – group of herbs that relieve skin diseases.

Kandughna – group of herbs that relieve itching sensation

Krimighna – group of herbs that relieve worm / microbial infection,

Shiro-virechana – Group of herbs that are useful to remove Dosha (toxins) from head.

Sushruta- *Haridradi, Mustadi, Slesmashamana* (group of herbs that balance *Kapha*)

Vagbhata- *Haridradi, Mustadi*

Medicinal Properties of turmeric – *Rasa* (taste) – *Tikta* (bitter), *Katu* (pungent) *Guna* (qualities) – *Rooksha* (dryness), *Laghu* (lightness)

Vipaka- Katu – undergoes pungent taste conversion after digestion.

Veerya- Ushna – Hot potency

Effect on *Tridosha* – because of its hotness, it balances *Vata* and *Kapha*. Because of its dryness, pungent and bitter taste, it balances *Kapha*. Due to bitterness, it balances *Pitta*. Hence it balances all the three *Doshas*. Mehanut – useful in diabetes and urinary tract infections.

Part used- Rhizome[11].

Turmeric for diabetes: हरिद्रा प्रमेहहराणाम्। (अ.ह.सू)

There are many herbs (drugs) which cure Diabetes, but nothing in comparison to Turmeric. This reference clearly suggests *Haridra* as the drug of choice in effectively tackling Diabetes Mellitus and Urinary tract disorders. In the treatment of Diabetes, *Haridra* is excellent option both as a preventive and curative agent. Many formulations related to Diabetes cure in *Ayurveda* have Turmeric as an essential ingredient. Haldi is an auspicious drug in Indian tradition and is used to worship Gods and Goddesses. Modern studies have shown *Haldi* (Turmeric, Curcumin) to be highly effective in curing Diabetes. Turmeric is shown to be highly effective in pre-diabetes. When its extracts are given regularly in pre-diabetes, Turmeric is seen to prevent its progression towards T2DM. This Turmeric or Curcumin can be effectively used in preventing Diabetes by administering it in the pre-diabetes population.[11]

The Mechanisms of PLANT Rhizome Curcuma Longa Action on Carbohydrate Metabolism in Alloxan - Induced Diabetes Mellitus Rats-The results indicate the positive effect of the Curcuma longa rhizomes on the homeostatic mechanisms of the carbohydrate metabolism regulation in the alloxan-induced diabetes mellitus rats[12].

Major chemical constituent:

Curcumene, Curcumenone, Curcone, Curdione, Cineole, Curzerenone, epiprocurcumenol, eugenol, Camphene, Camphor, Bornel, Procurcumadiol, Procurcumenol, Curcumins, unkonan A, B, & D, B- sitosterol etc.[13]

Discussion:

Diabetes mellitus is the commonest endocrine disorder and is as old as mankind. Since Vedic period, many herbs have been in use for treating diabetes. It is found that diabetes mellitus is invariably associated with dyslipidemia. So it becomes mandatory to take care of dyslipidemia in diabetic patients along with blood sugar levels as it is known to increase the morbidity and mortality if neglected. Therefore there is need for drug with both antidiabetic and hypolipidemic activity. In this regard, turmeric plays crucial role. According to classical and research work *Manjistha* is an important medicinal plant for diabetes mellitus.

Conclusion:

Curcuma longa & Rubia cordifolia medicinal herbs can be a good alternative for all age of diabetes mellitus patients. They are low cost, and tend to have fewer side effects. So people use them in various easy methods. It has been realized that medicinal herbs are going to play an important role in future. These herbal drugs provide strength to the body organs and stimulates normal functioning. The herbal drugs act selectively and gently without disturbing other system. Where as modern medicine affects several metabolic activity in the human system and has side effects which makes body more susceptible to other diseases. *Curcuma longa* & Rubia cordifolia have a lot of potentials as a medicinal usage in *Madhumeha*. Ancient *Acharyas* have already mentioned the use of *Haridra* (Curcuma longa) in management of *Madhumeha* thousands year back. Various researches have proved its antidiabetic

activity in experimental models as well as in clinical studies which confer a strong scientific base. Curcuma longa is proved to be effective in preventing Diabetes Mellitus and also in delaying the progression of pathology. Only a few works are attributed to its antidiabetic activity in human study, so, there is a large scope to explore its immense potential in the management of Diabetes mellitus in human studies which are need.

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Pharmaceutical Study

A Study Of *Madhumeha Vinashini Vatika* In *Madhumeha* (Diabetis Mellitus)

*Dr. Suparna Saha, **Dr. Parimi Suresh

Abstract-

Diabetes is one among the world's major diseases currently affecting an estimated 62 million people in India. WHO classify it as the third leading cause of premature mortality globally. In *Ayurveda* Diabetes mellitus is compared to *Madhumeha* which comes with a constellation of signs and symptoms with it. Apart from lifestyle changes, oral hypoglycemic agents a primary part of treatment but prominent side effects of such drugs are the main reason for a number of people seeking alternative therapies that may have less severe or no side effects.

The use of metals and minerals in therapeutics in the form of *Rasayoga* has been started from the period of classical texts in *Ayurveda* and preferred over herbal preparations because of their supremacy in providing quick relief and even treating the incurable diseases. *Madhumehavinashini vatika* is one such excellent herbomineral preparation described in the *rasoyogbijyaniyaadhya* of *Rasamritam* written by *Acharya Yadavji Trikamji*. The mineral part of compound includes *Tribanga bhasma, Shilajatu* while herbal components are *Madhunashini* (Gymnema sylvestre) & *Nimba Patra* (Azadirachta indica). The efficacy of all the ingredients of *madhumehavinashini vatika* are scattered across the classics of *Rasa Shastra* and the scientific Data are available in the reputed journal, which in one way authenticates the use of this herbomineral preparation and became the base of this study.

सारांश-

आयुर्वेद संहिता काल से धातु एवं धातु खनिज से निर्मित रसयोग का विभिन्न प्रकार की व्याधियों में उपयोग होता था। रस शास्त्र में वर्णित है कि भैषज साध्य व्याधि में कार्यकारी है परन्तु असाध्य व्याधि को रसौषधि ही निर्मूल कर सकती है। डायबीटिज मेलिटस का लक्षण आयुर्वेद शास्त्र में वर्णित मधुमेह के समान है। मधुमेह एक असाध्य व्याधि है इसलिए इसमें रसौषधि प्रभावी होगी। मधुमेह विनाशिनी वटिका एक ऐसा ही रसयोग है, जो आचार्य यादवजी त्रिकमजी ने रसामृतम् ग्रन्थ में वर्णन किया। इस औषधि के सभी घटक द्रव्य मधुमेहहर है, जैसे कि नाग, वंग, यशद, शिलाजतु, गुड़मार, निम्बपत्र। आधुनिक विज्ञान से भी एन्टीडायबीटिक प्रमाणित है। इस विषय को ध्यान में रखते हुए शोध कार्य का आधारभूत सिद्धान्त निर्णय किया गया।

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Pharmaceutical Study

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Introduction

Diabetes is one among the world's major diseases currently affecting an estimated 62 million people in India. WHO classify it as the third leading cause of premature mortality globally. In Apart from lifestyle changes, oral hypoglycemic agents a primary part of treatment but prominent side effects of such drugs are the main reason for a number of people seeking alternative therapies that may have less severe or no side effects.

Ayurveda Diabetes mellitus is compared to *Madhumeha* which comes with a constellation of signs and symptoms with it.

Materials and method :

• Selection of drug :

Madhumehavinashini vatika is one such excellent herbomineral preparation described in the *rasoyogbijyaniyaadhya* of *Rasamritam* written by *Acharya Yadavji Trikamji,* one of the prominent *Rsashastraa* texts of 20th century (1951); The mineral part of compound includes *Tribanga bhasma, Shilajatu* while *herbal* components are *Madhunashini (Gymnema sylvestre) & Nimba Patra (Azadirachta indica*)

As *'prameha'* is a *chirakaari Vyadhi, rasousadhi* may be beneficial due to its yogbahi properties and remarkable efficacy in *asadhya roga* ,Since all the ingredient of *Madhumehavinashini vatika* has individual anti diabetic properties, hence forth this particular drug has been considdered. dose prescribed is 3 gunja i.e. 375 mg in divided dose per day.

Justification for Selection of drug and mode of action

Each and every ingredient in a formulations works as per their antagonist or agonist properties and produce the effect in result. Similarly on exploring all the contents of *madhumehnashani vati* I have found that all the drugs are hypoglycemic in nature.

***Naag*/lead:** *Naag bhasma* lowers the blood sugar content and leads to mark improvement in the complaints on the patients of diabetes mellitus.[1]

Naag bhasma significantly controls the fasting blood sugar and post parendrial blood sugar levels in the patients of *madhumeha*. It also reduces the symptoms like polyurea, polyphagia, polydypsea.[2]

***Vanga*/Tin :** *Vanga bhasma* significantly controls the fasting blood sugar and post parendial blood sugar levels in the patients of *madhumeha*. During treatment schedule it does not show any adverse effect.

Role of zinc in diabetes mellitus :

- Zn acts as a co factor of the super oxaide dismutase enzyme by modulating the glutathione metabolism and metallotheonein.
- Zn Inhibit nicotinamide adenine dinucleotide phosphate oxidase enzyme.
- Zinc also promotes phosphorylation of insulin.
- Zn also improves the oxidative stress in pt by reducing chronic hyperglycemia.

Yasada Bhasma :

Yashad bhasma possesses significant hypoglycemic effect on streptozotacin induced hyperglycemia in rats.[3] It also has significant antidiabetic and cytoprotective activity on alloxan induced diabetes in rats. The bioevaluation study of *Yasada* exhibits significant hypoglycemic activity on glucose fed hyperglycemic conditions in rats at 3.3mg/kg dose.[4]

Yashad bhasma significantly decreases the cardinal signs and symptoms, fasting blood sugar level, post pandrial blood sugar level and urine

glucose level in patients of *madhumeha*.[5]

***Shilajatu* :**

Suddha shilajatu does not show any acute or chronic toxicity in animals. It is reported to have significant hypoglycemic effect in alloxan induced diabetes in rats. It has some degree of Beta cells regeneration property also.[6]

In clinical trials *shuddha silajit* significantly decreases the cardinal signs and symptoms, fasting blood sugar level, post parendial blood sugar level.[7]

Importance of the herbal drug in diabetes :

- **Mechanism of action of *Madhunashini***

***Gymnema sylvestre* contain gymnemic acid**

The atomic arrangement of gymnemic acid is similar to glucose molecules.

This molecules fills the receptor locations on the taste bud, thereby preventing its activation by sugar molecules present in the food.

Decrease blood glucose level by preventing sugar craving.

- **Role of *Nimba patra* in diabetes mellitus :**

Extract of A.Indica reduces pancreatic glucosidase activity

Since all the ingredient of *Madhumehavinashini vatika* has individual anti diabetic properties, henceforth this particular drug has been considdered.

There i s no previous research work had been done on *Madhumehavinashini* vatika.

Conclusion :

So, for the above reason research work should be done in this field, and I am conducting a ongoing study on Pharmaceutical, Analytical And Experimental Studies of *Madhumehavinashini* Vatika And *Trivanga Bhasma* on Streptozotocin Induced Diabetes Mellitus (*Madhumeha)* In Albino Rats.

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Case Study

Role of *Vasakadi kwath* in Diabetic Retinal Hemorrhages —A case study

*Dr.Pratibha Upadhyay, **Dr.Shamsa Fiaz

Abstract-

Introduction- Diabetes mellitus is becoming a global epidemic and is now one of the top causes of vision loss globally. Diabetes increases the risk of a range of eye diseases, but the main cause of blindness associated with diabetes is diabetic retinopathy (DR). DR damages blood vessels inside the retina at the back of the eye. It commonly affects both eyes and can lead to vision loss if it is not treated. The treatment of modern system of medicine, focal laser therapy, anti-vascular growth factor drugs. These treatment modalities have side effects, so in such disorders. Ayurveda is very effective in such complicated disorders. **Methods and materials**– 55yrs old diabetic patient since 10 yrs complaining of blurred vision attending *shalakya* OPD of NIA, was chosen having signs of retinal hemorrhages. Regular weekly visit was done for 1 month in hospital. **Result** –*Vasakadi kwath* seems to have role in controlling hemorrhages found in diabetic retinopathy. Visual acuity improved from 6/60 to 6/24 in 1 month. **Discussion**- The drugs selected here should be *vata* pacifying, as well as *pitta shamaka* with *rakta prasadka* properties that help in healing and reducing the symptoms that are caused especially due to ocular hemorrhages.

Key words –*Vasakadi kwath*, diabetic retinopathy, hemorrhages, visual acuity.

सारांश -

मधुमेह आज के युग में एक जनपदोध्वंस बन गया हैं। और नेत्रज्योति नाश का एक महत्वपूर्ण कारण हैं। मधुमेह से बहुत से नेत्र रोगों का खतरा बढ़ता हैं, परंतु इससे होने वाले अंधेपन का मुख्य कारण डायबिटिक रेटीनोपेथी हैं। यह रोग रेटिना कि रक्तवाहिनी सिरों का नाश कर देता हैं। यह प्राय: दोनों आँखों को प्रभावित करता हैं और यदि समय पर चिकित्सा न की जाये तो अंधापन कर देता है। आधुनिक शास्त्र में इसकी चिकित्सा औषधि, फोकल लेसर थेरेपी, एंटी वैस्कुलर ग्रोथ फैक्टर औषधियां तथा शल्य कर्म है परंतु इन विधाओं के दुष्प्रभाव भी है। अत: इन रोगों में आयुर्वेद चिकित्सा काफी कारगर है। इस अध्यन हेतु एक 55 वर्षीय मधुमेह से पीड़ित महिला रोगी को चुना गया, जो नजर कमजोर होने की समस्या से ग्रसित थी। जिसके परदे कि जांच करने पर रेटिनल हेमरेज पाया गया। इस रोगी को वासकादि क्वाथ का पान एक माह तक करवाया गया जिसके फलस्वरूप रोगी कि विसुअल एक्युटी 6/60 से सुधर कर 6/24 तक हो गयी। अत: निष्कर्ष स्वरुप यह कहा जा सकता है कि वासकादि क्वाथ का पान डायबिटिक रेटीनोपैथी में लाभप्रद है।

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Case Study

Role of *Vasakadi kwath* in Diabetic Retinal Hemorrhages —A case study

Dr. Pratibha Upadhyay, Dr. Shamsa Fiaz

Introduction-

As eyes are the gateways of external world, visual defects tatamount to the obliteration of the world. The diseases of eye are classified vividly in *Susruta Samhita* among which as per pathological site one group of eye disease known as *Dristigata roga*, (diseases of visual impairment). Among these diseases, *Timira* involving *patala* (layers of retina) is considered to be the most important and serious as far as its prognosis and treatment is considered. If it is not treated in time it leads to total blindness, *Timira* simulates to refractive error, presbyopia, cataract, vitreous pathology and disease of retina.

Prevalence—An estimated five million individuals worldwide suffer from this disease today, accounting for 4.8% of blindness worldwide[1]. According to the World Health Organization, diabetes is the leading cause of new cases of blindness among adults aged 20-74 years. More than 170 million people worldwide currently have diabetes, and this number is projected to skyrocket to 366 million by 2030. Approximately half of these cases are likely to develop DR. Rates of both diabetes and DR are expected increase significantly in developing countries due to a lack of access to health care.[2] In 2014, there were approximately 422 million people (8.5% of the world's adult population) living with diabetes; compared to 108 million in 1980 (2016 WHO Global Report on Diabetes)[3]. It commonly affects both eyes and can lead to vision loss if it is not treated. The treatment of modern system of medicine, focal laser therapy, anti-vascular growth factor drugs. These treatment modalities have side effects, so in such disorders. *Ayurveda* is very effective in such complicated disorders. As such this disease is not mentioned directly in our texts so we can take it as a type of *raktapitta doshaja timira*.

Timira is a disease which is included under *dristigata roga*[4]- disorders of vision and visual apparatus. *Timira* is *vata pradhan tridoshaja vyadhi* which gradually progress to involve the *Patalas* thereby deteriorating the vision. *Dristipatalagata roga* is mainly attributed to *Sira srotas abhisyandam* and *raktavaha sroto dusti* due to a variety of *Achakshyushya ahara* and *vihara*. *Nidana* of endogenic eye diseases are mainly *Achakshyushya* factors which vitiates pitta. The vitiated *pitta* in turn vitiates the pitta vaha srothas. Due to interconnection of pitta and rakta, *raktavaha srotas* is also vitiated. As the *nidana* factors are *Achakshyushya*, the vitiated *pitta* and *rakta* have an affinity towards penetrating the eyes. Hence the vitiated *dosha* turn towards the eyes through *Jatroordhwa* siras and *srotas* and finally gets confined to the eyes. In this context there is a stage when the *Sirasrothas* are deeply involved which is known as *Sira abhisyanda* in which the *Asrya sthana* is *Srotas*, affected *dhatu* is *Rakta* and vitiated *dosa* is *Pitta*.

Case report –

Material And Methods

Place of study- National institute of Ayurveda, Jaipur (Rajasthan), 302002

Presentation -55yrs old female patientof type 1 diabetic since 10 yrs complaining of gradual diminution of vision attending *shalakya* OPD of NIA, was chosen having signs of retinal hemorrhages.

History Of Present Illness- According to patient he was asymptomatic since 6 months gradually she found diminution of vision. She was already taking ayurvedic prescriptions for diabetes from NIA, so she was referred to our opd for her ocular complaints.

Personal History- Table no .1

Name: xyz

Bala: avara	Prakriti: Pitta Vata	
Age: 55years	Sleep: adequate	BP:130/80 mmHg
Sex: female	Addiction: None	Weight: 64kg
Marital status: married	Bowel habit: regular	Height: 158cm
Occupation: housewife	Appetite: good	

Ashtavidha Pariksha – Table no.2

Nadi (pulse): 80/min	*Shabda* (speech): Clear
Mala (stool): normal regular	*Sparsha* (touch):Normal
Mutra (urine9) :Normal	*Druka* (eyes):Normal
Jivha (tongue) : normal	*Akruti* (built): Madhyam

Regular visit was done for 1 month at 15 days interval in hospital. The patient's past medical history was significant only for T2DM. She did not have hypertension. Her T2DM was moderately controlled with allopathic and ayurvedic medicines medicines. She did not have glaucoma and had no history of undergoing eye surgery or any treatment for diabetic retinopathy (DR).

Treatment plan- Patient was treated on OPD basis.

Selected Ayurvedic Drugs: *Vasakadi kwath* was selected as oral drug.

Table no. 3: Dose, Route, Kala (drug administration time) of drugs used in the management

Name Of Medicine	Dose	Route	Kala
Vasakadi kwath	30 ml	Oral	Morning and evening

Duration: 1 month

Follow up - will be done once in 15 days for 1 month.

Criteria for selection of medicines: *vasakadi kwath* was selected on the basis of their properties useful in pacifying vitiated *dosha* in diabetic retinopathy and ability to relieve signs and symptoms.

Ingredients of trial drug –*Vasa Nimba, Patola, Triphala, Musta.*

Preparation of *kwath*— Each content were taken in equal quantity in *yavakuta* form. Patient was advised to prepare fresh *kwath* as per classics both time.

Counseling- As patient was also psychologically upset hence proper counseling of patient was done. She was made aware about the disease and the associated fact that Diabetic patient are more prone for ocular complaints. Patient was made aware regarding her condition and her health.

Follow up 1st- After first follow up patient had mild relief in signs and symptoms.

Duration- This treatment was carried out for 1 month.

Follow up -After 15 days. Signs and symptoms of the patient were assessed during each follow up and results were drawn after last follow up.

Local Examination— visual acuity was 6/60 in the right eye and 6/12 in the left eye with normal intraocular pressures at first visit Near vision before correction was N36 and after using glass N6.He was using glasses only for near vision. Slit

lamp examination of the anterior segment was normal in both eyes, and dilated fundus exam was significant for mild non-proliferative DR in both eyes.(microaneurysms, hard exudates, few signs of dot and blot hemorrhages in retina specially in the perimacular area are found), rest findings are within normal limits. Presbyopic glasses were advised by the optometrist.

Assessment criteria –

Subjective parameter- criteria based on symptomatology of *Timira*.

vihval drishti—Blurred vision not corrected by spectacles.

Objective parameter

- visual acuity
- Fundus examination by direct opthalmoscope
- Investigation- blood sugar (fasting pp), blood pressure.

Treatment

There are currently no eye-specific treatment options for early stage DR. The patient was referred back to her endocrinologist for diabetes management and told to return for proper follow up meanwhile oral medication of *vasakadi kwath* was indicated for resolution of hemorrhages found in non proliferative type of diabetic retinopathy along with for improvement of vision too.

Investigations	Before treatment	After treatment
Vision acuity	RE 6/60 LE 6/12	RE 6/24 LE 6/9
Blood pressure	140/80mmhg	130/80mmhg
Fasting blood sugar	96mg/dl	85mg/dl
Blood sugar (pp)	122mg/dl	120mg/dl

Follow up —

On her one-month return visit to the hospital, the patient was found to have RE 6/24 vision AND LE 6/9 but still had evidence of mild non-proliferative DR in her eyes.

Discussion —

Basis of drug selection- The drugs selected here for *Timira* should be *vata* pacifying as well as *pitta shamaka* with *rakta prasadka* properties which will help in healing and reducing the symptoms that are caused especially due to ocular hemorrhages. As in the textual reference of *vasakadi kwath* it is indicated that it is useful in hemorrhage, *kapha dosha shamak* and *chakshusya* properties.

Drug name	Latin name	*Rasa*	*Guna*	*Virya*	*Vipaka*	*Karma*	Ref. as Chakshyushya[5,6]
Patola	*Trichosanthes dioica*	*Tikta*	*Laghu Ruksa*	*Ushna*	*Katu*	*Raktasodhak, Sothahara Tridosha samak*	Su.U.17/51
Nimba	*Azadirachta indica*	*Tikta, Kashaya*	*Laghu*	*Sita*	*Katu*	*Pittasamak Madhumehanasak Chakshyushya*	Sa.S.3.13/29,35 *Bngsen netraroga* 117
Bibhitak	*Terminalia belerica*	*Kashaya*	*Ruksya Laghu*	*Ushna*	*Madhura*	*Sothahara Raktasthambhak Chakshyushya*	Su.U.12/31 Raj.Ma.3.15 A.H.U.13/46

Musta	*Cyperus rotundus*	*Katu, tikta, Kashaya*	*Laghu Ruksha*	*Sita*	*Katu*	*Kapha pitta samak Raktaprasadan*	Ga.Ni.3.3/200 Ga.Ni.3.3/299,302
Haritaki	*Terminalia Chebula*	*Pancharasa Lavan barjit*	*Laghu Ruksha*	*Ushna*	*Madhura*	*Tridoshasamak*	Su.U.17/49
Amalaki	*Embelica Officinalis*	*Pancharasa Lavan rahita*	*Laghu Ruksha Sita*	*Sita*	*Madhura*	*Tridoshahara Pittasamak Rasayana Sonitasthapan*	Raj.ma.3/10 Ch.Chi.26/260 Su.U.12/49 Ba.Se.Netra-34
Vasa	*Adhatoda vasica*	*Tikta Kashaya*	*Laghu Ruksha*	*Sita*	*Katu*	*Kaphapitta Samak Raktasthambh*	CH.SU27,su.su-6

The contents of the trial drug are altogether *shita virya, tikta kashyaya rasa, shonitha sthapana*, thus indicating their appropriate role in *Timira* as well as retinal hemorrhages.

- *Triphala*[7] to possess free radical scavenging, antioxidant, antiinflammatory, antipyretic, analgesic, antibacterial, antimutagenic, wound healing, anticariogenic, antistress, adaptogenic, hypoglycaemic, anticancer, chemoprotective, radioprotective and chemopreventive effects.
- C. rotundus are reported to possess antiinflammatory, antipyretic, antibacterial and antidiarrhoeal properties, while antiinflammatory and antibacterial activities[8].

Conclusion –

Vasakadi kwath[9] seems to have role in improving visual acuity found in diabetic retinopathy. Visual acuity improved from RE 6/60 to 6/24 LE 6/12 to 6/9 in 1 month along with subjective relief. But still no significant changes observed in the fundus pathology like haemorrhages, (dot and blot), hard exudates, and microaneurysms in both eyes.

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Case Study

"Effect of *Shodhana Ropana Lepa* In Diabetic Foot Ulcer (*Madhumehajanya dushtavrana*)"- A Case Study

*Dr. Kalpana Verma

Abstract

Diabetic foot ulcer is a common complication of diabetes mellitus. There is a significant risk of loss of limb as a result of delayed and improper treatment. In our country a large number of case have to suffer from amputation, out of them maximum amputations can be prevented by timely intervention. The diabetic foot ulcer can be considered as *Dushtavrana* in *Ayurvedic* classics and the need to look for the management through Ayurveda. In the management of *Dushtavrana Sushruta* emphasized upon shodhana. A clean wound in normal body heals earlier with minimum scar as compared to contaminated wound. Therefore in present concept all efforts are directed to keep the wound clean during various stages of wound healing. Such healing process is called *Shodhana* and *Ropana*. *Acharya Sharangdhara* explained *Shodhana Ropana Lepa* in the management of *Dushta vrana*. Here a case of 62yr old female patient complains of wound over right foot sole since 8 months, with mild discharge. H/o DM since 16 year, Thyroid since 5 year under treatment etc. After required investigations and local examination of wound, patient was planned and treated by local application of Shodhana Ropana lepa for 5 weeks. On weekly assessment circumference of the wound is reduces and completely healed without any complication and side effects.

Keywords: Diabetic foot ulcer, *Dushtavrana, Shodhana, Shodhana Ropana lepa.*

सारांश–

मधुमेहजन्य व्रण मधुमेह का एक सामान्य उपद्रव है। जिसकी उपेक्षा एवं ठीक तरीके से सही उपचार न किया जाये तो एक बहुत बड़ा खतरा रहता है पैर गंवाने का। हमारे देश में एक बड़ी संख्या इस समस्या से जूझ रही है (अम्पुटेशेन), जिसमें से ज्यादातर विच्छेदन (अम्पुटेशन) समय रहते सही उपचार से बचाया जा सकता है। आयुर्वेद में मधुमेहजन्य व्रण को दुष्ट व्रण माना गया है। अतएव यहाँ आवश्यकता है, आयुर्वेद से इसका उपचार। आचार्य सुश्रुत ने दुष्टव्रण की चिकत्सा में शोधन बताया है, एक शोधित व्रण स्वस्थ्य व्यक्ति में शीघ्र भरता है एवं निशान भी कम होता है, एक संक्रमित व्रण की तुलता में। अत: इस प्रस्तुत संकल्पना में सारे प्रयास व्रण को शोधित एवं रोपित करने के लिए है। यह व्रण रोपण की प्रक्रिया शोधन एवं रोपण कहलाती है। दुष्टव्रण की चिकित्सा में आचार्य शार्ङ्गधर ने शोधन रोपण लेप का वर्णन किया है। यहाँ पर एक 62 वर्षीय महिला रोगी के दाहिने पाव में व्रण है एवं मधुमेह का उपचार चल रहा है। सारी जाँच एवं परीक्षण के उपरान्त शोधन रोपण लेप से उपचार किया जिससे व्रण पूर्णतया भर गया।

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Case Study

"Effect Of *Shodhana Ropana Lepa* In Diabetic Foot Ulcer (*Madhumehajanya dushtavrana*)"- A Case Study

Dr. Kalpana Verma

Introduction

In present scenario sedentary life style, a lot of stress and over nutrition are important etiology of diabetes, as one of the most prevalent diseases in the world. Diabetic foot is the most dreaded complication of diabetes mellitus. High blood glucose levels for longer durations damage blood vessels leading to reduced blood flow to the foot. This poor blood circulation contribute to the formation of ulcers and impairs wound healing. Elevated blood glucose levels over time can damage the nerves of foot decreasing persons ability to notice pain and pressure Diabetic neuropathy is most disabling as it leads to increased morbidity and decreased quality of life in patients with diabetes. Loss of sensations further lead to develop pressure spots and accidentally injure the skin, soft tissues and bones. Failure to recognize symptoms of autonomic neuropathy may lead to secondary complications in form of diabetic foot ulcers. One of the most feared complications of this disease is loss of lower limb and is a challenge to surgeons.

In *sushruta samhita*, diabetic foot is correlated with '*madhumehaj vrana*'. During its description, *Sushruta* stated that the management of these *vranas* are difficult i.e *kastsadhaya*[1]. According to *Sushruta, meda* and *rakta* along with other *dosha* and *dushya* lead to the formation of *premeha pidika* which later converted to non-healing wounds and also further specified that wounds over lower limb are difficult to heal[2&3]. There is a significant risk of loss of limb as a result of delayed and improper treatment. In our country a large number of case have to suffer from amputation, out of them maximum amputations can be prevented by timely intervention.

The diabetic foot ulcer can be considered as *Dushtavrana* in *Ayurvedic* classics and the need to look for the management through *Ayurveda*. In the management of *Dushtavrana Sushruta* emphasized upon *shodhana*. A clean wound in normal body heals earlier with minimum scar as compared to contaminated wound. Therefore in present concept all efforts are directed to keep the wound clean during various stages of wound healing. Such healing process is called *Shodhana* and *Ropana*. *Acharya Sharangdhara* explained *Shodhana Ropana Lepa* in the management of *Dushta vrana*[4].

Aims And Objectives:

The main aim of the study is to evaluate the efficacy of *Shodhana Ropana Lepa* in the management of the Diabetic foot ulcer (*Madhumehajanya Dushtavrana*).

Material And Methods:

Materials -The formulation selected for this study is *Shodhana Ropana lepa* explained by *Acharya Sharangdhara*, in the management of *Dushta Vrana*[5].

Method of preparation of *shodhana ropana lepa*:

- The fine powder of *danti, nishoth, saindhava lavan* and *kalka* of *nimba patra* and *krishna* till was taken in equal quantity
- The sufficient quantity of *madhu* was mixed to the above said ingredients and did *mardhana* till it reached a semisolid state.
- This is *Shodhana Ropana lepa* and stored in an airtight glass container

Case Report:

The present case study was carried out on a female, 62yr old Hindu patient, attended the opd of Shalya Tantra N.I.A Jaipur with complains of non healing wound over right foot sole since 8 months, with mild discharge. H/o DM since 16 year, Thyroid since 5 year under treatment and her blood glucose

levels were within normal limits. But from last 8 months she developed non-healing wound over right foot sole. She took treatment for it but got no relief. Finally, she came to N.I.A. Hospital for further management.

After required investigations and local examination of wound, it was found that wound was irregular in shape with rough edges and unhealthy granulation tissue. On further inspection the surrounding areas of wound show inflammatory changes with unpleasant watery discharges.

After admitting the patient, following investigations were done and patient was planned and treated by local application of *Shodhana Ropana lepa.*

Investigations:

1) Blood sugar – 192 mg/dl

2) Urine routine and microscopic – NAD

3) X-ray left foot (AP/LAT) –NAD

Treatment Plan-

Application of *Shodhana Ropana Lepa* was planned.

Procedure

1. *Poorvakarma*:

- Patient was positioned comfortably in the dressing room.
- *Madhumehajanya Dushtavrana* was washed with plain water/ Normal saline with the help of cotton swabs held in sponge holder.

2. *Pradhana karma*:

- Patient was made to sit on dressing table.
- Application of Prepared *Shodhana Ropana lepa* was done on the wound.

3. *Pashchath karma*:

- Plain sterile gauze was placed over the *vrana* and roller gauze was bandaged with moderate tension.
- The patient was advised foot end elevation while lying down.

Duration of Treatment – 5 weeks

Result

Patient started getting relief from 1st week onwards. During 1st week there was continous and watery discharge. After that it started reducing. At the end of 3th week the discharge reduced and significantly and wound started healing and contracting.

After 5th week the patient was completely cured.

Discussion-

The patient treated with application of *Shodhana ropana lepa* had yielded better outcome with relief in exudate, pain, granulation tissue.

It suggests that *shodhana ropana lepa* influences in decreasing exudates, pain and odour to limited extent and stimulated granulation tissue in the wound bed and this implies that it have good wound healing properties or *vrana shodhana* and *ropana* properties.

Probable mode of action of *Shodhana Ropana Lepa*

The ingredients of *Shodhana ropana lepa* are having vrana shodhana and vrana ropana properties as per the literature and their chemical constituents are proven to be having antibacterial, antiviral, debriding properties with established pharmacological anti ulcer activity thus enabling wound healing and was clinically observed and especially, *Madhu* or Honey, the base of the *lepa* is having antimicrobial property and is supported by recent studies which shown the anti inflammatory property, inhibitory property on many species of aerobes, anaerobes, gram-positive and gram negative organisms, stimulatory effect on proliferation of peripheral blood cells, B-Lymphocytes, T-Lymphocytes and phagocytes to release cytokines, tumor necrosis factor, interleukin, IL-1 and IL-6 which activate the immune response to infection.

Conclusion:

The patient treated with *Shodhana ropana lepa* had yielded better outcome with more percentage of relief in exudate, pain, granulation tissue.

Case Report

Surgical wound infection and dehiscence in an undiagnosed diabetic patient

*Dr. Pooja Arya, **Dr. Suman Sharma, ***Prof. Sanjeev Sharma

Abstract

Post surgical wound infection is the most dreaded complication in surgery and causes a great frustration to the patient and surgeon both. Among the reasons for such a complication uncontrolled or undiagnosed diabetes mellitus is the foremost. A 52 years old male patient presented with the history of trauma and complaint of pain over left knee since 1 month. On clinical and radiological examination he was diagnosed as a case of displaced transverse fracture of left patella. There was no history of diabetes or any other chronic disease. All the haematological and serological investigations were normal except borderline diabetes as his fasting blood glucose was 124mg/dl. Open reduction & internal fixation with tension band wiring was done. Post-operative period was uneventful except the wound infection. After 6 weeks wound dehiscence occurred and was full of slough. Debridement and implant removal done under spinal anaesthesia. Even after extensive surgical debridement and implant removal wound did not show any sign of healing. He was re-investigated and his glycocylated haemoglobin (HbA_{1c}) was found 7.3 mg /dl. Then along with local wound management h/e was put on anti-diabetic drugs. Wound healed completely within next 2 weeks. It was concluded that proper pre-operative screening for diabetes mellitus is of immense importance to avoid such complications.

सारांश–

शल्य चिकित्सा के पश्चात् व्रण में होने वाला संक्रमण शल्य चिकित्सक तथा रोगी दोनों के लिए ही अत्यन्त चिन्तित करने वाला विषय है। इस प्रकार के विकारों का मुख्य कारण अनियन्त्रित तथा समय पर पता नहीं चलने वाला मधुमेह रोग है। एक 52 वर्षीय पुरुष रोगी जिसको चोट सम्बन्धी इतिवृत्त था तथा वह 1 महीने से बाँये घुटने में दर्द से परेशान था। उसका चिकित्सकीय तथा विकीरण परीक्षण में यह निदान निश्चित किया गया कि उसे बाँये जानु संधि में भग्न है। उसकी डायबिटिज तथा अन्य किसी भी प्रकार की जीर्ण व्याधि का इतिहास नहीं था। सभी रक्त संबधित जाँचे सामान्य थी परन्तु रक्त शर्करा (खाली पेट) का स्तर 124 मि.ग्रा./डेली था। प्रत्यक्ष स्थानापनयन और आभ्यांतर स्थिरिकरण तनावयुक्त बंधन के साथ किया गया। शल्य कर्म के पश्चात् व्रण में संक्रमण था। 6 सप्ताह बाद व्रण पूरी तरह से पूय से भरा था। स्पाइनल निश्चेतक के साथ उस व्रण का शोधन किया गया तथा इम्प्लान्ट हटाया गया। इन सबके पश्चात् भी वहां पर व्रण रोपण के चिह्न नहीं दिखाई दिये। रूग्ण का रक्तादि प्रयोगशालीय परीक्षण पुनः किये गये और उसका ग्लाइकोसिलेटिड हीमोग्लोबिन (HbA_{1c}) 13 मि.ग्रा./डी.एल. पाया गया। स्थानिक व्रण की चिकित्सा के साथ मधुमेह से संबन्धित औषध दी गई। इसके पश्चात् मात्र दो सप्ताह में व्रण पूर्ण रूप से ठीक हो गया। अन्ततः यह निष्कर्ष निकाला गया कि ऐसे शल्य कर्म में रक्तादि परिक्षण विशेषतः मधुमेह जैसी व्याधियों की जाँच किया जाना अत्यन्त महत्वपूर्ण है।

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Case Report

Thumari oil (*securinega leucopyrus*) in the management of Diabetic Foot Ulcer – A Case report

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Abstract:

Introduction : Diabetic foot ulcers are major complication of Diabetes mellitus. 15% of diabetic people suffer from foot ulcers. In mostly cases of diabetic ulcers are the result of underlying neuropathy. Proper assessment of diabetic foot ulcer and appropriate management ensure better prognosis and management. Diabetes is a leading cause of Non traumatic lower extremity amputations in India, with approximately 5% of diabetics developing foot ulcers each year. **Aim:** To evaluate the effect of *Thumari* oil (*Securinegaleucopyrus* [Willd.] Muell.in Diabetic foot ulcer. **Materials and Methods:** A case of 60 year old female patient complaining of ulcer on foot (dorsal aspect) along with gangrenous changes in two fingers, treated successfully with Thumari oil local application. The relief in signs and symptoms were assessed by weekly interval on scoring pattern. **Results:** Diabetic foot ulcer healed within 10 weeks with minimal scar formation. **Conclusion:** Study concluded that *Thumari* oil possesses *shodhan, ropan* (healing) and *savarnikarn* properties.

Keywords: *Thumari*, gangrene, Diabetic foot ulcer

सारांश–

प्रस्तावना–पादस्थ व्रण मधुमेह के उपद्रव स्वरूप प्रमुखतया पाया जाता है जिससे लगभग 15 प्रतिशत रोगी प्रभावित होते है। इसमें से अधिकांशत: तन्त्रिका संवेदन हीनता के परिणाम स्वरूप प्रकट होते है। भारत देश के लगभग 5 प्रतिशत मधुमेही आघातहीन अध:शाखागत छेदन का अग्र कारण है। **उद्देश्य**– थुमरी तैल का मधुमेहजन्यपादस्थ व्रण में मूल्याकंन करना। **सामग्री एवं विधि** – कोथमय परिवर्तन जन्य पादस्थ व्रणयुक्त 60 वर्षीय स्त्री का थुमरी तैल के स्थानिक प्रयोग द्वारा सफलता पूर्वक चिकित्सा की गयी। चिह्नों एवं लक्षणों में सुधार का नियमित साप्ताहिक अन्तराल से अंकन किया गया। **परिणाम**–10 सप्ताह के पश्चात् मधुमेहजन्य पादस्थ व्रण एक अल्पक्षत चिह्न के साथ पूर्णत: भर गया। **निष्कर्ष**–थुमरी तैल अध्ययन से निष्कर्ष निकलता है कि यह व्रण शोधन–रोपण एवं त्वक् सवर्गीकरण गुणधर्म रखता है।

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Case Report

Thumari oil (*securinega leucopyrus*) in the management of Diabetic Foot Ulcer – A Case report

Dr. Naresh Kumar Ghodela, Dr.T.S. Dudhamal

Introduction:

Diabetic foot ulcers are common and estimated to affect 15% of all diabetics. In India, it is estimated that approximately 40,000 legs are being amputated every year; of which 75% are neuropathic feet which are potentially preventable.

Among various complications, diabetic neuropathy and peripheral vascular disorders are closely associated with diabetic foot ulcers (DFUs). Lower extremity ulcers and amputations are ongoing problems among individuals with diabetes. Trophic lesions may appear, such as ischemic ulcers and necrosis of the toes, responsible for the worsening of pain, which may already be present due to the disease itself.[1] Peripheral neuropathy, arterial disease, and infection all play an important role in the causal pathway to diabetic limb amputation.[2]

Diabetes is a complex chronic disease that requires regular medical follow-up. Diabetes care involves a change in lifestyle (healthy eating, physical activity, stopping smoking, weight control and effective problem-solving strategies), self-management of the disease (adherence to the medication, self-monitoring of blood glucose) and the prevention of complications (adherence to foot care and screening for vision and kidney problems).[3]

A major hindrance in the controlling of diabetic foot ulcers is the colonisation of wounds by bacterial pathogens. It involves a mixture of aerobic and anaerobic organisms[4] aerobic gram-positive cocci like *Staphylococcus aureus*are predominates in the infection. Due to the deleterious pathway of ulcer development, patients with DM and DPN require the highest care.

Securinegaleucopyrus is a desert climatic plant found in wet climates in *Sri Lanka* known as *Katupila*. *Katupila* (*Securinegaleucopyrus*) (Willd.) Muell is a commonly used folklore remedy in *Sri Lanka and Saurashtra* region of India. It belongs to the family Euphorbiaceae. It is known as *Humari* or *Paanduraphalika* in the Indian Sub-continent also called as "Spinousfluggea" in English. *Katupila* possesses *kashaya* and *Tiktarasas; Lagu, Ruksha, Tikshnagunas; Ushnaveerya* and *Katuvipaka*. *Katupila* leaves act as an antiseptic and its paste is used in folklore to extract any extraneous materials from body tissues without surgery.[3] Its leaves and the bark are rich with vast number of important phytochemicals such as alkaloids, terpenoids, steroids, flavanoids, saponins, phenol and glycosides.[5]

Procedure:

Thumari Oil was prepared as per the general methodology of oil preparation. *Snehapaka* (oil preparation) was made with *thumari* (paste), *tilataila* and *thumari* (decoction) in the ratio of 1:4:16. The oil so prepared was packed in an airtight plastic container.

Clinical Report:

A 60 year old woman was a known case of type 2 diabetes mellitus for four years consulted to outpatient department of IPGT & RA, Jamnagar. She had been taking oral hypoglycaemic medications regularly named tab. Glynase MF. She had noted a sore on planter aspect of second and third digit after a week and discharge from their few days later. Patient ignored treatment and infection spreaded.

Patient was suffering from non-healing ulcer at dorsal aspect of right foot. Patient was examined and found 8x5 cm ulcer along with exposed tendons, distal gangrene with foul smell [Waganar Grade 4 and 5]. Swab culture revealed a growth of Pseudomonasaeruginosa and E.coli. This case was planned with aim to evaluate the effect of Thumarioil (Securinegaleucopyrus [Willd.] Muell.in Diabetic foot ulcer. She have normal BP (130/80mm of Hg) and Pulse rate (68/min). The laboratory investigations were done as shown below:

Case Report

Ayurvedic Management Of Diabetic Nephropathy : A Case Report

Vd. Parveen Kumar, Dr. Manish V.Patel, Prof. Dr. S.N Gupta

Introduction:

Diabetic nephropathy is the leading cause of kidney disease in patients and affects ~40% of type 1 and type 2 diabetic patients.[1] Diabetic nephropathy is one of the leading causes of chronic renal failure in India. The prevalence of diabetic nephropathy was 30.3% followed by chronic interstitial nephritis (23.0%) and chronic glomerulonephritis (17.7%).[2] Diabetic nephropathy is categorized into stages: microalbuminuria and macroalbuminuria, hyperglycemia, increased blood pressure levels, and genetic predisposition are the main risk factors for the development of diabetic nephropathy.[3]

Patients's History Of Present Illness:

In April 2016 the patient, 71 year old, had already diagnosed for diabetes mellitus since 12 years and Hypertension since 2 years having weakness, loss of appetite, constipation, insomnia, breathlessness of grade 1, dysuria. He has continued conventional medicine Tab Ltk H 1tab OD, Tab Glimison M1 ½ OD. He came to P.D. Patel Ayurveda Hospital, Nadiad and then after several investigations he found to be high level of s. creatinine, protein in urine. Then he hospitalized here for one month of period.

Clinical Findings:

Patient was conscious with intact mental status but looks anxious and tired. He had breathlessness of grade 1 with fatty abdomen. He has difficulty in urination. Other findings i.e. urine output was 1000ml/24 hours, BP 150/80 mm of hg, Pulse 72/min, Respiration rate 19/min and regular.

Diagnostic Findings:

GFR 17ml/min/1.73m^2, S.creatinine 3.4mg/dl, Rbs 83mg/dl, Urine: albumin 1+, specific gravity 1.015, sugar nil

Therapeutic Intervention:

- *Gokshuradi guggulu* 3 tablets three times in a day
- *Varunadi kwatha* 40ml twice in a day,
- *Rasayana churna* 3gm three times in a day
- *Bhumyamalaki churna* 3 gm three times in a day
- *Ikshumula kwatha* 40ml twice in a day,
- *Niruha basti* with *Punarnavadi kwatha* 320ml in the morning
- *Nadisvedana* on lumbar regions

Outcomes:

Patient's hematological and biochemical investigations were carried out periodically as mentioned here.

Signs & Symptoms	B.T.	Hospitalization		Follow-up	
		2 weeks	4 weeks	2 months	4 months
Urine O/P (/litre)	1000	1200	1200		
Abdominal Pain	+	-	-	-	-
Weakness	++	+	+	-	-
Loss of appetite	+++	++	+	-	-
Breathlessness	+	-	-	-	-

Insomnia	+++	++	++	+	-
B.P.(mm of Hg)	140/80	130/80	130/80	130/80	130/90
Weight(kg)	90.6	87.1	86.7	83.1	82.5

Lab investigations Date	Serum creatinine (mg/dl)	Blood urea (mg/dl)	Hb (gm%)	RBS (mg/dl)	PPBS (mg/dl)	Urine sugar	Urine albumine	GFR (ml/min /1.73m²)
18/04/16	3.4	——	——	83	——	Nil	+1	17
27/04/16	2.2	34	8.9	80	——	Nil	Trace	29
04/05/16	2.0	24	8.1	——	161	Nil	Trace	33
11/05/16	1.8	39	8.6	——	166	Nil	Absent	37
27/05/16	1.9	29	——	105	——	Nil	Absent	35
24/06/16	1.5	28	10.6	87	——	Nil	Absent	46
22/07/16	1.9	23	10.7	150	——	Nil	Absent	35
08/08/16	1.7	17	11.1	166	——	Nil	Absent	40

Discussion:

According to *Ayurveda*, nephropathy is a disease of *mutravaha srotas*. Though, all the three *doshas* as well as all the dushyas are involved in the disease. *Kapha* is responsible in blocking microvessels and developing microangiopathy. Vata is responsible for degeneration of the structure of the kidney. According to the *Ayurvedic* principles of management of the disease, tissue damage can be prevented and repaired by *rasayana* drugs because they have the capability to improve qualities of tissues and hence increased resistance of the tissues. On the other hand blockage can be removed by *lekhana* drugs having scraping effect on blocked channels.

Goksuradi guggulu is a well-known and commonly used medicine in diseases of mutravaha Srotas. It is specially indicated in *Prameha, mutrakriccha* and *mutraghata* along with other indications of *mutra* and *shukravaha Srotasa*.[4] *Varunadi kwatha* relieve the *kapha* and *vata doshas*. *Rasayana curna* has *rasayana* properties especially beneficial in *mutravaha srotas* because of *Goksura*. *Bhumyamalaki curna* is a *rasayana*[5] and has been described as *Mutraroga Nashini* in *Rajnighantu*. *Ikshumula kwatha* has diuretic property. *Niruha basti* of *punarnavadi kvatha* is a minor alternative of dialysis. During one month of treatment period he got remarkable improvement in renal function test as well as signs and symptoms. The main goal is to correct albuminuria, which is the cardinal feature of diabetic nephropathy, and improve renal function which is evident by reduction in serum creatinine. In addition, the treatments also improve the general condition of the patient.

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Conceptual Study

Prevention and Control of *Madhumeha* (Diabetes Mellitus Type 2) through *Aahar*, *Vihar* and *Yoga*

*Vasundhara Sharma, **Sachin Kumar Sharma, ***D.H.Pandya, ****K.S.Patel

Abstract-

WHO has declared this millennium as millennium of life style diseases in comparison to last millennium of infectious diseases. According to WHO, India today heads the world with over 32 million diabetic patients and this number is projected to increase to 79.4 million by the year 2030. Recent surveys indicate that diabetes now affects a staggering 10-16% of urban population and 5-8% of rural population in India. Diabetes is likely to continue to be a leading cause of morbidity and mortality in the near future. It has been proved from several epidemiological studies that the current worldwide status is broadly due to modified dietary habits and life style changes. Current dietary habits along with sedentary life style are main culprits for diabetes outburst. Central obesity is the most important risk factor for diabetes. *Ayurveda* has suggested a potential role of *aahar*, *vihar* and *yoga* in prevention of *Mahumeha*. Role of diet and physical activity in prevention and control of *Madhumeha* will be discussed in detail in full paper.

Key Words : Madhumeha, Diabetes Mellitus Type 2, *Aahar*, *Vihar* and *Yoga*.

सारांश-

विश्व स्वास्थ्य संगठन ने विगत 20वीं शताब्दी को संक्रमण जन्य व्याधियों की शताब्दी घोषित किया वहीं अब 21वीं शताब्दी घोषित किया गया वहीं अब 21वीं शताब्दी को जीवन शैली से जुड़ी व्याधियों की शताब्दी घोषित किया है। WHO के अनुसार भारत देश 3.2 करोड़ मधुमेह (Diabetes) के रोगियो के साथ अग्रिम स्थान पर हैं तथा यह संख्या 2030 तक बढ़कर 7.94 करोड़ होने की सम्भावना है सर्वेक्षण दर्शाते हैं की मधुमेह (Diabetes) भारत में 10–16 प्रतिशत शहरी जनसंख्या एवं 5–8 प्रतिशत ग्रामीण जनसंख्या को प्रभावित करती है। ऐसी सम्भावना है कि आने वाले समय में रोग और मृत्यु के कारणों में प्रथम मधुमेह (Diabetes) ही होगा विभिन्न शोध द्वारा यह प्रमाणित किया जा चुका हैं कि विश्व में रोगों की वर्तमान स्थिति के लिए व्यक्ति विशेष का खान पान एवं रहन सहन उत्तरदायी है। वर्तमान युग में खानपान के तौर तरीके और चेष्टाद्वेष Diabetes के प्रकोप के मुख्य कारण हैं। आयुर्वेद में मधुमेह (Diabetes) के रोकथाम के लिए आहार, विहार और योग का मुख्य योगदान है। मधुमेह (Diabetes) की रोकथाम में आहार विहार का योगदान संपूण पेपर में पूर्ण रूप से बताया जायेगा।

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Conceptual Study

Prevention and Control of *Madhumeha* (Diabetes Mellitus Type 2) through *Aahar*, *Vihar* and *Yoga*

Vasundhara Sharma, Sachin Kumar Sharma, D.H.Pandya, K.S.Patel

Introduction:

It is well established that diabetes mellitus (DM) is a progressive metabolic disorder, characterized by hallmark signs such as hyperglycemia, which is due to a deficiency of the hormone insulin. According to the World Health Organization (WHO) report, India today heads the world with over 32 million diabetic patients and this number is projected to increase to 79.4 million by the year 2030[1]. Recent surveys indicate that diabetes now affects a staggering 10-16% of urban population[2] and 5-8% of rural population[3] in India. Diabetes is likely to continue to be a leading cause of morbidity and mortality in the near future. It has been proved from several epidemiological studies that the current worldwide status is broadly due to modified dietary habits and life style changes. Current dietary habits along with sedentary life style are main culprits for diabetes outburst. Along with glucose control, for patients of DM, there is a strong need of maintaining a healthy and balanced life in order to avoid any complications. There are essentially key self-preservation behaviors in patients with diabetes that predict healthy outcomes eating well, being physically active, monitoring blood sugar regularly, compliance and adherence to the medications prescribed, good problem-solving skills, healthy coping skills and risk-reduction behaviors. All of these behaviors have proven to show a positive correlation with good glycemic control, reduction of complications and improvement in quality of life.

Causes of diabetes as per *Ayurveda*

Physical and mental causes[4]:

- ✓ *Asyasukham* – Comfortable seating (luxury, sedentary lifestyle, lack of physical activities and exercise)
- ✓ *Svapnasukham* – comforts of sleeping, excess sleeping
- ✓ *Kapha krut cha sarvam* – All foods and lifestyle activities which increase Kapha
- ✓ *Sahaja* (inherited factor)
- ✓ *Chinta* (stress) Shoka (grief)
- ✓ *Bhaya* (fear)
- ✓ *Deergharoga* (longstanding illness)
- ✓ *Alasya* (sedentary life)

Food and drinks that cause diabetes:

- ✓ *Dadhi* – Excessive consumption of Curds and its preparations
- ✓ *Gramya-oudaka-anupa mamsa* – flesh or meat soup of animals living in water and marshy regions
- ✓ *Payamsi* – Excessive consumption of milk, its derivatives and preparations
- ✓ *Navaanna panam* – Food, drinks and dishes prepared from new grains etc
- ✓ *Guda vaikruti* – Jaggery, its derivatives and dishes made out of it
- ✓ *Guda* (jaggery)
- ✓ *Ikshurasa* (sugarcane)
- ✓ *Madhura Ahara* (sweet substances)
- ✓ *Pishta Ahara* (carbohydrate rich food)
- ✓ *Adyashana* (repeated food intake)
- ✓ *Adhikashana* (excess food intake)
- ✓ *Ahitashana* (unwholesome diet)
- ✓ *Guru ahara* (heavy food)
- ✓ *Samashana* (improper diet)

- The Indian Diabetes Risk Score (IDRS) showed the strongest (5-fold risk) association with incident diabetes-higher than obesity or hypertension.[9,10,11] Obesity and abdominal obesity conferred a 2-fold risk of diabetes, whereas hypertension conferred a 3-fold risk of diabetes.
- Higher IDRS is also associated with higher risk of metabolic syndrome and CVD risk even among people without prediabetes or diabetes.
- The IDRS has a sensitivity of 72.5% and specificity of 60.1% and is derived based on the largest population.[12]
- IDRS uses two modifiable risk factors (waist circumference and physical inactivity) and two non-modifiable risk factors (age and family history of diabetes), providing a clear message that if modifiable risk factors are altered, the risk score can be considerably reduced.
- IDRS may be predictive of metabolic syndrome and cardiovascular disease as three of the factors [age, physical activity and waist circumference] are risk factors for both metabolic syndrome and cardiovascular disease.

Risk factor for T2DM (Highest risk group are those who)

- ✓ Above 45 years
- ✓ Obese / overweight
- ✓ Family history of T2DM
- ✓ Pre-diabetes
- ✓ Do not exercise
- ✓ Have low HDL or high triglycerides
- ✓ Have high BP
- ✓ Have had Gestational Diabetes
- ✓ High fat and carbohydrate diet
- ✓ High alcohol intake
- ✓ Older people
- ✓ Women having PCOS

Wholesome diet habit for diabetes:

Asthenic type the treatment should be mainly based on the line of increasing stamina and vitality by way of tonics (*brumhana*) diet, drugs etc. and the patient should never be given excessive *Langhana* or *Apatarpana* i.e. he should not be starved, he should always be given some food. A diabetic and an obese person generally suffer from excessive appetite and thirst and so some type of nutrition should always be given to them. In all classics, ahara dravyas are described in detail and they cover all the food groups are:

1. Cereals:

- ✓ *Yava* (Hordeum vulgare - Barley) are the best, different preparations of food, prepared from Barley can be given e.g. *Mantha, Odana, Appopa*, bread, Roti etc.
- ✓ Wheat (Godooma)
- ✓ Rice - Ayurveda prescribed old rice (*purana shali*), as one of the cereals, which can be prescribed to the diabetic patients.

2. Pulses:

- ✓ *Mudga* (Vignaradiata Greengram)
- ✓ *Chanaka* (Cicer arietinum Linn. – Bengal gram)
- ✓ *Kulattha* (Dolichos biflorus)
- ✓ Adhaki (Cajanus cajan - Pigeon pea) etc, can be taken.

3. Vegetables: All types of bitter vegetables (*Tikta shaka*) e.g.

- ✓ *Karela* (Momordica charantia - Bitter gourd)
- ✓ *Methi* (Trigonella foenum-graecum - Fenugreek)
- ✓ *Patola* (Vietnamese luffa, Vietnamese gourd, or Chinese okra)
- ✓ *Rasona* (Allium sativum Linn. – Garlic)
- ✓ *Udumbara* (Ficus racemosa - Cluster Fig Tree, Indian Fig Tree), etc. should be given.

4. Fruits:

- ✓ *Jambu* (Syzygium cuini - Black berry)
- ✓ *Amalaki* (Phyllanthus emblica - Nepalese/Indian gooseberry, or amla),
- ✓ *Kapitta* (Limonia acidissima - Wood Apple,

Elephant Apple, Monkey Fruit)

- ✓ *Tala phala* (Borassus flabellifer - the Asian Palmyra palm, Toddy palm, Sugar palm)
- ✓ *Kharjura* (Phoenix sylvestris –Date Sugar Palm)
- ✓ *Kamala* (Nelumbo nucifera Indian lotus, sacred lotus, bean of India, or simply lotus,) Utpala (Nymphoea Stellata) etc., can be allowed to take.

5. Seeds:

- ✓ *Kamala, Utpala* seeds can be allowed to take.

6. Liquor:

- ✓ Old *sura* (old wine) may be given.

7. Oils:

- ✓ Mustard oil (*Sarshapa taila*) is best.
- ✓ *Ingudi* (Balanitis aegypotiaca) *Ghritha* may be used in pitthaja prameha.

Unwholesome diet for diabetes:

- ✓ *Kanda- moola* (root-rhizome)
- ✓ *Ikshu* (sugar cane juice)
- ✓ *Taila* (oil)
- ✓ *Ghrita* (ghee)
- ✓ *Guda* (jaggery)
- ✓ *Kanjika/shukta* (fermented beverages)
- ✓ *Madya* (alcohol)
- ✓ *Pishtanna* (carbohydrate rich food)
- ✓ *Dadhi* (curd)
- ✓ *Navanna* (new grains)
- ✓ *Divaswapna* (day sleep etc)
- ✓ *Sadaasanam* – Always sitting at one place (sedentary)
- ✓ *Diva swapna* – Sleeping in the day time
- ✓ *Navanna* – Dishes prepared from fresh rice
- ✓ *Kshara* – Alkali's
- ✓ *Guda* – Jaggery
- ✓ *Suram* – Alcohol / fermented drink
- ✓ *Ghritam* – Ghee
- ✓ *Amla* – sour foods
- ✓ *Ikshurasa* – Sugarcane juice
- ✓ *Anupa mamsa* – Flesh / meat of animals living in marshy areas etc

Anti diabetic Herbs and Foods of Ayurveda:

- ✓ ***Jambhul* (Eugenia jambolana):** The jambul fruit is regarded as a specific medicine in traditional ayurvedic medicine because of its specific action on the pancreas. The fruit, the seeds, and the whole fruit juice are all useful in the treatment of diabetes. The seeds contain jamboline, which controls the excessive conversion of starch to sugar. For internal usage, dry the seeds, powder them, and take 3 grams, twice daily with water or butter milk.
- ✓ **Bitter Gourd/bitter melon (Momordica charantia):** The fruit and seeds of this plant contain most active blood sugar-lowering components. This contains an active principle called charantin. For better therapeutic benefits, extract juice from four to five karelas every morning and take on an empty stomach. You can take the seed powder either directly or in the form of a decoction.
- ✓ ***Bel* (Aegle marmelos):** Though this plant is famous for its fruit, here we are interested in its leaves. They are scientifically proven to be antidiabetic. Drink fresh juice of leaves daily along with pinch of black pepper. This will take care of your excess body sugar.
- ✓ **Fenugreek (Trigonella foenum graecum):** The medicinal qualities or fenugreek seeds are described in ayurvedic literature. In recent studies, it has been reported that the decoction of fenugreek seeds suppressed the urinary excretion of sugar and relieved symptoms of diabetes. It contains trigonelline, and an alkaloid known to reduce blood sugar levels.
- ✓ **Turmeric:** Ayurveda recommends turmeric as an exclusive remedy for diabetes. It is more effective if taken with an equal amount of amla powder

- ***Neem*:** Neem is an age-old remedy and does not require a trip to stores. It is easily available anywhere. Leaves made to juice or paste can be taken internally to lower blood sugar.

Meal Planning Guidelines:

Meal plans are balanced

- They include breakfast, lunch, dinner, and two snacks.
- Each one-day plan includes about 8 servings of fruits and vegetables.
- Fruits and vegetables are included at almost every meal and snack.

1550-1650 calories per day

- Your calorie level may vary based on your age, gender, activity level and whether or not you need to lose weight.
- Calories are spaced throughout the day between meals and two snacks.

Moderate-carbohydrate (about 45% of calories come from carbohydrate)

- Carbohydrate intake is spread throughout the day.
- Most meals have 45-60 grams of carbohydrate.
- Most snacks have 10-25 grams of carbohydrate.

Limit trans fat as much as possible, <10% of calories from saturated fat, and focus on healthy or "good" fat sources

- People with diabetes have a higher-than-average risk of having a heart attack or stroke. Due to their connection with heart disease risk, the amount of saturated and trans fats in our meal plans is limited. Trans fat and saturated fats are sometimes referred to as "bad fats."
- "Good fats" include monounsaturated and polyunsaturated fats and may promote heart health. Meal plans include these over "bad fats" as much as possible.

300mg of cholesterol per day

- People with diabetes should have 300 mg or less per day.
- Some foods, like shrimp and eggs, are fairly nutritious foods but are somewhat high in cholesterol. Meal plans may include these foods because they provide other benefits or help to balance the plan.

>25 grams of dietary fiber per day

- You get fiber from plant-based foods like whole grains, fruit, vegetables, nuts, seeds and beans.
- People with diabetes should consume at least the recommended amount of fiber for the general population: about 25 grams per day for women and 38 grams per day for men.

2300 mg of sodium or less per day

- Watching sodium is important for blood pressure control.
- The American Diabetes Association recommends 2300 mg of sodium or less per day.

Dos and don'ts for Diabetics[13]

1. Eat at regular intervals

Eating at regular intervals helps keep the sugar levels consistent and avoids hypoglycemia.

2. Replacing simple carbohydrates with the complex one

Replacing simple carbohydrates such as (rice, white bread, white pasta, maida) with complex carbohydrates such as oats, *bajra, jowar,* ragi and wheat would help avoid rise in the sugar levels.

3. Opting for low-carbohydrate meal

Opt for a low-carbohydrate meal consisting of roti, vegetable, salad, egg whites or skim paneer instead of a full meal which includes roti, rice, dal, vegetable and salad at one time.

4. Protein + fibre = accelerated metabolism

It is advisable to eat either one portion of protein (skim milk products, chicken, fish, egg whites) and a portion of fibre (vegetables, fruits, salads) or Omega 3 fats (fish, flaxseeds, walnuts) in each meal to help accelerate metabolism and promote fat lossand there by effective sugar control.

5. Exercise daily

It is important to incorporate exercise into daily lifestyle (5 days of walking for 45 minutes) to maintain sugar levels and induce fat loss and maintain levels.

6. Go for home remedies

1 tsp methi seeds, soaked okra water, 1 tsp cinnamon and 1 glass dudhi karela juice are few home remedies which are known to control diabetes.

7. Monitor using glucometer

Regular checks on the glucometer are most effective way to monitor the daily food intake and its effect on the sugar levels to determine the right food options for diabetics and the options to be restricted or minimised due to their effect on the sugar levels.

8. Lose weight

Controlling or losing weight is the most effective and guaranteed way to manage diabetes.

9. Low binge eating

It is essential to maintain a low binge eating or food cheating record to 1- 2 times a week; be it rice, maida, potatoes.

Don't:

- Eat saturated fats
- Consume sugars or starches
- Take excess alcohol

Exercise Plan[14]

1. Endurance Activities (aerobic exercise)

Try these aerobic activities 3 to 5 days per week to strengthen your heart and lungs and improve your circulation:

- Walk briskly

✓ 1 3/4 miles in 35 minutes (20 minutes per mile)

✓ 2 miles in 30 minutes (15 minutes per mile)

✓ Join a mall-walking program

- Cycle

✓ 5 miles in 30 minutes or

✓ 4 miles in 15 minutes

- Swim laps for 20 minutes
- Jump rope for 15 minutes
- Run 1 1/2 miles in 15 minute (10 minutes per mile)
- Play basketball
- Shoot baskets for 30 minutes or
- Play a game for 15-20 minutes
- Dance fast (social dancing) for 30 minutes
- Skate for 30-40 minutes
- Try an at-home exercise video

2. Strength Activities

Do strength activities 2 to 3 days a week to build your muscles and bones, improve posture and balance, and prevent osteoporosis.

✓ Weight lifting

✓ Sit-ups and push-ups

✓ Climbing stairs

✓ Lifting and carrying groceries

Yoga[15]

Surya namaskar

- ***Asana*** like***:***

✓ *Pacchimotasana,*

✓ Dhanurasana (Bow pose in prone position)

✓ Ardhamatsyendrasana (Half spinal twist),

✓ Vajrasana Yoga Mudra

✓ Pavan Muktasana

✓ Sarvangasana

✓ Halasana

✓ Matsyasana have been found useful in diabetes.

- ***Pranayama*** *like:*

✓ *Bhramari*

✓ *Bhastrika*

✓ *Kapalbhati*

- Meditation

Conclusion

To conclude, diabetes management through dietary intervention along with life style modification is the most effective way to prevent and reduce the risk of developing diabetes and its complications.[16] It is essential that information about maintaining and controlling weight, dietary modification, regular exercise and yoga is provided through different health education programs. Diabetes risk score will help us to device effective screening strategies to unmask hidden burden of the disease. Subjects with high IDRS regardless of their blood sugar status, are ideal candidates for life style modification as these are risk factors for not only diabetes but also for cardiovascular disease. DM is a palliative disease, it cannot be completely cured but, can be controlled by *aahar*, *vihar* and *yoga*. The increasing diabetes trend can be prevented by following proper *aahar*, *vihar* and *yoga*. It is also important to undertake more research on the preventative measures in the local context which promote healthy life styles therefore leading to improved quality of life for individuals and societies.

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Conceptual Study

Critical appraisal on Anthropometric aspect of Diabetes mellitus

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Abstract:

Anthropometry is the branch of Anthropology concerned with the various measurements on human individual. It has been used to access general obesity (Body mass index) and central obesity (Waist Circumference, Waist-to-hip ratio, Waist- to- Height ratio) and various indices. WHR is closely linked with BMI and is appropriate index of intra abdominal fat mass and total body mass. Obesity particularly visceral or central as evidenced by WHR is very common in Diabetes type-2. Diabetes mellitus is a group of metabolic diseases in which there are high blood sugar levels over a prolonged period. There are two main types of Diabetes mellitus- Type1 DM, which result from pancreas failure to produce enough insulin and Type 2 DM, which begins with insulin resistance, a condition in which cells fail to respond to insulin properly. Prevalence of disease is proportional to the fat level in body. It is stated that consumption of high fat diet and high intake of saturated fat are associated with an increased risk of type 2 diabetes. High fat diet and obesity cause beta cells to lose their ability to sense glucose in the blood.

Acharya Charaka has also described the symptoms and treatment of *medasvi purusha*(obese person). *Acharya* consider *medavardhak aahar* as one of the cause of *prameha* and consider *janmotar premaha* patient as *sthula pramehi. Acharya charaka* has also given fix *anjali pramana* of *meda* in body. So there is necessity to understand and elaborate various anthropometric measurements concern with diabetes which helps in prevention, diagnosis and management diabetes mellitus.

Keywords: Diabetes mellitus, Anthropometry, Obesity, *meda, pramana.*

सारांश–

मानवमिति, मानवशास्त्र की एक शाखा है जिसमे मानव के विभिन्न अंगो का मापन लिया जाता है इसका उपयोग सामान्य मोटापे (BMI) और केन्द्रीय मोटापे (Waist Circumference, Waist to Hip ratio, Waist to Height ratio) और विभिन्न सूचकांको तक पहुँचने के लिए किया गया है। WHR, BMI से निकटता से जुड़ा हुआ है और यह अंत:उदरस्थ वसा भार और कुल शरीर भार का उपयुक्त सूचकांक है। WHR के प्रमाण के अनुसार डायबीटीस टाइप–2 मे विशेष रूप से visceral या central obesity होती है। डायबीटीस मेलाइटस चयापचय संबंधित रोगों का एक समूह है जिसमे रक्त शर्करा का स्तर लम्बे समय तक बढ़ा हुआ रहता है डायबीटीस मेलाइटस मुख्यत: दो प्रकार का होता है– टाईप–1, जिसमे अग्नाशय से पर्याप्त इन्सुलिन का संचार कम हो जाता है, टाईप–2, जो इन्सुलिन प्रतिरोध से शुरू होता है, ऐसी स्थिति जिसमे कोशिका इन्सुलिन के प्रति प्रतिक्रिया ठीक से नहीं दे पाती हैं। अधिक वसा युक्त शरीर मे इस रोग के होने की संभावना अधिक होती है यह कहा जाता है की उच्च वसा युक्त भोजन और संतृप्त वसा के सेवन से टाईप–2 डायबीटीस मेलाइटस होने की संभावना बढ़ जाती है उच्च वसा युक्त आहार और मोटापे के कारण बीटा कोशिकाएँ रक्तगत शर्करा का अनुमान लगाने मे असमर्थ हो जाती हैं। आचार्य चरक ने भी मेदस्वी पुरुष के लक्षण तथा उपचार का वर्णन किया है। आचार्य चरक ने मेदोवर्धक आहार को प्रमेह का कारण बताया है तथा जन्मोत्तर प्रमेह रोगी को स्थूल प्रमेही कहा है उन्होंने शरीर मे मेद का एक निश्चित प्रमाण भी बताया है अत: डायबीटीस मेलाइटस के रोकथाम, निदान व प्रबंधन हेतु मानवमिति मापन को विस्तृत रूप मे समझने की आवश्यकता है।

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Conceptual Study

Critical appraisal on Anthropometric aspect of Diabetes mellitus

Dr. Vikash Bhatnagar, Dr. Shailja Bhatnagar, Dr. Vikrant Thakur
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Introduction:

The word 'Anthropos' means human and 'metron' means measurement. Human body measurements convey a lot of information about an individual's physical status, shape, size, and physique and body composition. There has been a variety of procedures for taking any body measurement[1]. These measurements are helpful in diagnosis of diseases. Diabetes mellitus is a clinical syndrome characterised by hyperglycaemia caused by absolute or relative deficiency of insulin[2]. Hyperglycaemia has many causes but is most commonly due to type 1 or type 2 diabetes. Obesity or Hyperlipidaemia is a risk factor for most of lifestyle disorders like Hypertension, diabetes etc. There are various Anthropometric indicators about the nutritional status of an individual. Body mass Index (BMI), Waist circumference, Waist to Height ratio (WHtR), Waist to Hip Ratio (WHR) etc[3]. are anthrhropometric parameters used in Diabetic patient for diagnosing the disease. These parameters calculate risk of heart disease, diabetes, stroke and Hypertension etc. In *Ayurveda, pramana* of constituents of body are also described by *Acharyas* in *Pramana Sharir*.

Diabetes Mellitus:

Diabetes mellitus (DM) refers to a group of common metabolic disorders that share the phenotype of hyperglycemia[4]. About 415 million people of world are suffering from diabetes mellitus with type 2 DM making 90% of the cases. Depending on the etiology of the DM, factors contributing to hyperglycemia include reduced insulin secretion, decreased glucose utilization, and increased glucose production. There are mainly two types of diabetes mellitus[5]:

Type 1 DM: It results from the pancreas's failure to produce enough insulin. This form was previously referred to as Insulin Dependent Diabetes Mellitus (IDDM) or Juvenile diabetes.

Type 2 DM: It begins with insulin resistance, a condition in which cells fail to respond to insulin properly. As the disease progresses a lack of insulin may also develop. This form was previously referred to as Non Insulin Dependent Diabetes Mellitus (NIDDM) or Adult- onset diabetes or Adult onset diabetes.

Risk Factors[6]:

- Family history of diabetes (i.e., parent or sibling with type 2 diabetes).
- Obesity (BMI 25 kg/m^2).
- Habitual physical inactivity.
- History of GDM or delivery of baby >4 kg (>9 lb).
- Hypertension (blood pressure 140/90 mmHg).
- HDL cholesterol level <35 mg/dL (0.90 mmol/L) and/or a triglyceride level >250 mg/dL (2.82 mmol/L).
- History of vascular disease.

Sign and Symptoms[7]:

The classic symptoms of untreated diabetes are weight loss, polyuria (increased urination), polydipsia (increased thirst), and polyphagia (increased hunger). Other sign and symptoms may include blurry vision, headache, fatigue slow healing of cuts and itchy skin.

Diagnosis[8]:

- Symptoms of diabetes plus random blood glucose concentration 11.1 mmol/L (200 mg/dL) or
- Fasting plasma glucose 7.0 mmol/L (126 mg/dL)
- Two hour plasma glucose 11.1 mmol/L (200 mg/dL) during an oral glucose tolerance test.

Anthropometric aspect of Diabetes Mellitus:

Anthropometry can be used to access the

health of an individual. Nowadays various anthropometric indicators are used to access the nutritional status of an individual or to diagnose a disease. DM Type 2 is a lifestyle disorder. High cholesterol, obesity, cardiovascular disease and family history are some common risk factors for Diabetes mellitus. These can be accessed by use of anthropometry. Body mass index, Waist Circumference, Waist-to-hip ratio, Waist- to- Height ratio is used to access the risk of Diabetes mellitus.

Body Mass Index: A combination of weight and height, which is very popular in public health screening, is the Body Mass Index (BMI). The Body Mass Index or Quetelet index is a value derived from the mass (weight) and height of an individual. The BMI is defined as the body mass divided by the square of the body height[9], and is usually expressed in units of kg/m^2, resulting from mass in kilograms and height in metres.

The BMI is used to quantify the amount of tissue mass (muscle, fat, and bone) in an individual, and categorised individual as underweight, normal weight, overweight or obese based on BMI value. BMI value greater than 25 is on risk of cardiovascular disease and Diabetes mellitus. BMI greater than 30 is considered as obese.

Waist Circumference (WC)[10]: Waist circumference along with hip circumference seems to be a better indicator of the abdominal adiposity Waist circumference is an indicator of health risk associated with the excess fat around the waist. A waist circumference (WC) greater than or equal to102 cm in male or greater than or equal to 88 cm in female are on greater risk of Type 2 DM. Waist circumference is measure at the midpoint between the lower margin of the last palpable rib and the top of the iliac crest, using a stretch resistance tape during normal exhalation.

Waist Hip Ratio (WHR)[11]: Now- a- days Waist Hip Ratio used as an indicator or measure of health and the risk of developing problems like DM2 risks in adults. WHR is the ratio of the circumference of the waist to that of the hips.

WHR = Waist circumference/Hip circumference.

Hip circumference should be measured around the widest portion of the buttocks, with the tape parallel to the floor.

Men with waist hip ratio more than 1.0 and women with waist hip ratio more than 0.8, are at increased risk of DM 2.

Anthropometry has been described in detail in *Ayurveda samhitas* by *Acharyas Sushruta* and *Charaka* as *Pramana sharira*[12, 13]. Normal *mutra* and *vasa pramana* in body was given by *Acharyas*. *Acharya Charaka* and *Sushruta* have given the symptoms of *Medsara Purusha*. Eyes, hair, skin pores, nails, lips, urine and stool of *Medsara purusha* are oily. *Acharya Charaka* has given a *pramana* of *4 Anjali* for *Mutra* and *2 Anjali pramana* for *Meda* of Adult. Fat is deposited in Hip, abdomen area. *Medavardhak Ahar Vihar* is considered as one of the cause of *Prameha*. In *Prameha*, there is increased frequency of *Mutra* and increased *Meda*.

Discussion and conclusion:

The prevalence of Diabetes mellitus is increasing alarmingly day by day. Besides multiplying the risks for coronary heart disease, diabetes enhances the incidence of cerebrovascular strokes. Moreover it is the leading cause of acquired blindness and account for over percent of cases with end stage renal failure. Anthropometry can be used in Medical science, to diagnose and to prevent risk of diabetes mellitus with various Anthropometric parameters. Anthropometry was also well developed in ancient times in *Ayurveda* texts under *pramana sharir*. *Anjali* and *Anguli pramana* was given for specific body constituents. So by using science of Anthropometry, we can diagnose and manage Diabetes mellitus and other disease.

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Conceptual Study

Prevention of *Madhumeha* and It's Complications Through *Ayurveda*

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Abstract-

Faulty dietary habits, sedentary life style and stressful conditions may leads to various metabolic disorders and diabetes is one of them. In *Ayurveda, Madhumeh* one of the types of *vataj prameh* is compared to diabetes mellitus because of having similarities of diseases in respect to Etiopathogenesis, clinical features and prognosis. Prevalence of diabetes is increasing day by day throughout the world where India leads the highest numbers. Type-2 DM is responsible for approximately 90% of cases. *Ayurveda* plays an important role in prevention of Type-2 DM. To prevent this disease and it's complications it is necessary to follow principles of *Ashtahar vidhivisheshayatan, Dincharya, Rutucharya, Sadavritta* and practising particular Asana and yoga postures.

सारांश–

असंतुलित, आहार शारीरिक श्रम का अभाव व तनाव अनेक प्रकार के रोगों को उत्पन्न करने में कारण है। उन रोगों में मधुमेह भी एक है। मधुमेह वातज प्रमेह का एक भेद है। जिसकी तुलना आधुनिक विज्ञान मे निदान, लक्षण व साध्यासाध्यता के आधार पर डाइबटीस मलाइटस से की गई है। सम्पर्ण विश्व में मधुमेह के रोगियों की संख्या दिन प्रतिदिन बढ रही है। भारत में इसके अधिकांश रोगी पाए गए हैं। डायबटिज के रोगियो में भी टाइप–2 के रोगी अधिकतर (90 प्रतिशत) पाए जाते हैं। मधुमेह के निवारण मे आयुर्वेद का अधिक महत्व हैं। मधुमेह व मधुमेह के उपद्रवों की रोकथाम के लिए आयुर्वेद के सिद्धांत जैसे–अष्ट विध आहार विशेषायतन, दिनचर्या, ऋतुचर्या, सद्वृत का पालन, विशेष प्रकार के आसन व यौगिक क्रियाए अधिक प्रभावशाली हैं।

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Conceptual Study

Prevention of *Madhumeha* and It's Complications Through *Ayurveda*

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Introduction

Diabetes is one of the most common Non-communicable diseases (NCD's). It is a chronic metabolic disorder of impaired carbohydrate, fat and protein metabolism [10]. The prevalence of diabetes increasing rapidly day by day. Type-2 diabetes is more common and present about 90% of all diabetic cases. According to IDF (International Diabetic Federation) 2014, worldwide about 387 million people were suffered with diabetes. In India, WHO reports show that 32 million people had diabetes in the year 2000[1]. According to WHO by the year 2030 India would have around 80 million diabetic patients and would contribute 20% of world's diabetic population.[2] Irregular dietary habits, sedentary life style and stressful conditions may leads to various disorders and diabetes mellitus is one of them. In *Ayurveda* clinical features, etiopathogenesis and prognosis of *Madhumeh* resembles with that of diabetes mellitus. *Madhumeh* comprises of two words; *Madhu* means sweetness/ honey and *Meh* means excessive urination). The synonyms mentioned in Ayurvedic texts are *Madhumeha, Ojomeha, Kshaudrameha. Madhumeha* is one of the twenty *prameha*. If these *prameha* not cured properly then they might convert into *Madhumeha* and become incurable. Diabetes mellitus may leads to various long term complications like diabetic Retinopathy, Nephropathy, neuropathy etc. Hence prevention of Type -2 diabetes is a major issue now days. The main principles of *Ayurveda* i.e. *Nidanaparivarjan* and Diet (*Pathya- Apathya), Ashtahar vidhi-visheshayatan, dincharya, ritucharya, sadavritta* and practising *Asan and Yoga* plays an important role in prevention and control of diseases from further complications. Early identifications of risk factors and appropriate interventions through *Ayurveda* could greatly help to prevent or at least delay the onset of diabetes and thus reduce the burden of non-communicable diseases in India.

Conceptual Part:

The marked increase in diabetic patients is attributed to rapid changes in lifestyle & economic progress of India. According to *Acharya Charak* vitiation of three *doshas* causes 20 types of *prameha* and also other innumerable disorders[3]. *Nidan* (etiology), *Dosh* (innate pathogenic factors) and *Dushya (*substratum of pathogenesis) these three factors when combined together immediately and in strong state cause immediate manifestation of *prameh*. In *madhumeha* patient passes large quantity of urine which looks like *madhu* (honey) and having *kshaya* (astringent taste) and *madhur (*sweet taste). The texture is *ruksha (*dry), honey like color and the body attains sweetness. *Acharya Sushruta* has narrated *kshaudrameh* in place of *madhumeha*.

Etiological Factors

Al those etiological factors of *prameh* mentioned in our ayurvedic literature are also the causative factors of *madhumeh* as it is one of the varieties of *prameha*. Lack of exercise and consumption of food that increase *kapha, meda and mootra* are major causative factors of the disease. These are the sedentary habits and increased consumption of sweets and fats in daily diet. Excessive intake of food having *ushna*, *snigdha* and *guru guna*, excessive quantity and prolonged use of new grains, use of legumes like black gram, sesamum paste, rice cooked with milk, sugarcane products, fresh wine are the main causative dietary factors of *prameh* according to *Acharya Charak*. Other causes are use of curds, flesh of animals of domestic, aquatic or of marshy places, milk and all that factors which increase *kapha* in the body[4]. Indulgence in sitting on soft cushion for long periods of time, avoiding physical activities sleeping for long hours, abstinence from cleanliness, under nutrition during important period of growth and development during fetal life, infancy and childhood all these factors are

contributive to the causation of disease .

Types

According to *Ayurveda madhumeha* has been divided into these categories:

1. *Kaphaj Prameha* (Further divided into 10 types)
2. *Pittaj Prameh* (Further divided into 6 types)
3. *Vataj Prameh* (Further divided into 4 types)
4. *Sahaj Prameh* (Juvenile onset diabetes)

On the basis of etiology ayurveda divides diabetes mellitus into two categories:

1. Genetic (*Sahaja)* occurring in young age from very beginning of life has similarities with juvenile onset diabetes or insulin dependent diabetes.
2. Acquired (*Apathayaj)* due to unhealthy life style that occurs in old ages and obese person has similarities with type 2 diabetes and its prevalence is more as compare to type1 diabetes.

According to physical management[5]:

1. *Apatharpana janya prameha* describing the lean diabetic: Requires *Santarpan chikitsa (*restorative) management
2. *Santharpana janya prameha* relating the obese diabetic: Requires *Aptarpan chikitsa* (fat reducing) management.

Prognosis

Charaka describes the prognosis in three categories[6]

1. *Sadhya* – Curable: Patients who have diagnosed early in the onset, those who are *sthoola* (obese) and the origin of their disease in *apathyaja.*

2. *Yapya* – Palliable : *Pittaja prameha* and certain types of *kaphaja pramehas* are however helps control with treatment (palliative management).

3. *Asadhya* – Incurable: *Vataja* describes the incurable version of prameha and inherited diabetes, a *krisha* (lean) patient who is suffering with *Sahaja* variety. [7]

Updrava

There are many *updrava* of *madhmeha* many of which are correlated with that of complications of diabetes mentioned in modern science. *Udavarta, aruchi, avipaka, atisar, badhapurisha* can be compared with 'gastrointestinal autonomic neuropathy' symptoms are abdominal distension, nausea, vomiting, dysphagia, diarrhea and constipation concomitantly. *Trishna, bhrama, shoola* and *shwasa* can be correlated with diabetic ketoacidosis in which weaknesses, blurring of vision etc. are seen. *Shoola* as in diabetic neuropathy in which pain occurs as nerve involvement is there. *Prameh pidika* as mentioned by *Acharaya* can be correlated with carbuncles. So to prevent these complications in diabetes is a great matter of interest and is need of hour. But modern medicines are not much efficient in controlling these complications. By following Ayurvedic principles mentioned in our ancient texts in terms of *Ahar* and *Vihar* could be better option for prevention of complications of diabetes once it has occurred.

Role Of Diet And Life Style In Prevention Of Prediabetes And Diabetes:

Nidanparivarjan

'Prevention is better than cure'. It is an advice to make the people alert about their life style strategies. For preventing *prameha has* clearly mentioned walking for 100 *yojan* (1 *yojan* approx 7.5 km).[8] Ayurveda gives more importance to the etiological factors as the avoidance of these factors can itself prevent manifestation of any disease. By following the main *ayurvedic* principle of *nidanparivarjan* in case of madhumeh i.e.by avoidance of the above mentioned etiological factors that has been mentioned in our *ayurvedic* texts one can prevent and manage diabetes very well. Prediabetes is the prodromal phase of diabetes in which blood glucose level may be either normal or on higher side of normal range. Fasting blood sugar screening should begin at age 30-45 years and should be repeated every three years. The health complications associated with type 2 diabetes mellitus often occur before the medical diagnosis of diabetes is made ,therefore people with borderline blood sugar i.e. prediabetes should go for frequent screening and they should change their diet and life style to prevent the onset of diabetes. When we review the literature of *ayurveda acharya charak*

mentioned the *purvarupa* of *prameh* which resembles with prediabetic conditions.

Modalities Of *Swathavritta* For Prevention Of *Madhumeha*:

Dinacharya, Ritucharya i.e. seasonal changes bring about diseases and they may be prevented by adopting certain seasonal diet and life style according to *Dosha Sanchya Prokopa* and *Shamana -Shodhan* respective to a particular season. *Thrayopasthambha palana, Sadvritha*, *Achara rasayana, Ashtanga yoga*, suppress the *dharaniya vegas,* not to suppress the *Adharaniya vegas* ,avoid *Virudhahara*, not to indulge in *mithya ahara* and *vihara,* avoid *hina, mithya* and *ati yoga of Indriya, kaya, vak and mana,* not to do *Pragyaparadha*, not to consume *guna, matra, desha and kala virudha aharas.*

Yoga

Yoga has been practiced for more than 5000 years. *Yoga* stimulates the organs which in turn improves metabolic activities. Certain posture causes direct stimulation of pancreas that enhances the production of insulin by the pancreas. *Vrikshasan* stimulate the hormonal secretion of pancreas, *Dhanurasan* (Bow pose) improves the functioning of pancreas and intestines, thus helps in controlling blood sugar levels. Organs like liver, Pancreas and enzymes producing organs will function actively by practicing *Ardhmatsendrasan* (half twisted pose) and *Halasan* (plough pose). Yoga helps in rejuvenating pancreatic cells, increases glucose uptake by muscular cells, improve circulation and reduce the risk of cardiovascular disease. Exercising through yoga can reduce weight that is essential for type 2 diabetes. Regular *yoga* practice can help to focus the mind and create the right mental approach to prevent and manage diabetes [9].

Pranayam

Besides asanas, breathing exercises like *Anulom Vilom* (alternate nostril breathing) and *kapalbhatti* (one time inhale;exhale) 30 to 40 times quickly is extremely effective for prevention and management of diabetes. *Anulom Vilom* has calming effects on nervous system, causing equilibrium in function of all the system. Thus, this *pranayam* can reduce the risk of various complications like neuropathy. *Kapal bhatti* on the other hand stimulate pancreas and help control blood sugar level.

Diet

The role of *Ahara* and *Vihara* are equally or even more important in diabetes to control blood sugar level as well as to prevent complications of this disease. In all classics, *ahara dravyas* are described in detail and they cover all the food groups are[7,5]: -

1. Cereals:

Yava (*Hordeum vulgare* - Barley), different preparation of barley e.g. *Mantha, Odana* etc. Wheat (*Godhooma*) can also be given. Old rice (*purana shali*), as one of the cereals, which can be prescribed to the prediabetic patient and diabetic patient.

2. Pulses:

Mudga (*G*reengram), *Chanaka* (*Cicer arietinum)*, *Kulattha (Dolichos biflorus), Adhaki (Cajanus cajan*) etc, should be taken.

3. Vegetables:

All types of bitter vegetables (*Tikta shaka*) eg. *Karela* (*Momordica charantia*), Methi (*Trigonella foenum*), *Patola* (*Vietnamese luffa)*, Rasona (*Allium sativum)*, *Udumbara* (*Ficus racemos)*, etc. should be given

4. Fruits:

Jambu (*Syzygium cumni*,) *Amalaki (Phyllanthus emblic),* K*apitta (Limonia acidissima*, *Tala phala* (*Borassus flabellifer)*, *Kharjura* (*Phoenix sylvestris*), *Kamala* (*Nelumbo nucifera*), *Utpala* (*Nymphoea Stellata*) etc. should be given

5. Seeds:

Kamala, *Utpala* seeds can be allowed to take.

6. Flesh:

Harina mamsa (Deer flesh), *Shashaka mamsa* (Rabbit), Flesh of birds like *Kapotha, Titira* etc., can be taken.

7. Liquor:

Old sura (old wine) may be given.

8. Oils:

Mustard oil (*Sarshapa taila*) is best. *Ingudi* (*Balanitis aegypotiaca*), *Ghritha* may be used in *pitthaja prameha*.

Conclusion

High risk people should be identified and they are advised for behavioral, dietary and lifestyle changes after recognizing *Purvaroopa* of *Madhumeha*. Type 2 diabetes mellitus is a common, primarily because of increases in the prevalence of a sedentary lifestyle and obesity.

With appropriate use of Ayurvedic preventive measures as explained in our ayurvedic literature as *Swasthvritta* modalities such as *Dincharya, Ritucharya, Ahar vidhi, yoga, pranayam* and therapeutic measures *Madhumeha* (DM) can be prevented at all levels .

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Literary Review

Evaluation Of The Effect Of *Pathya Ahar* And *Vihar* On Gestational Diabetes Mellitus (GDM)

*Dr.Preeti chouhan, **Dr. Sunita Suman

Abstract:-

Gestational diabetes mellitus (GDM) is defined as any degree of glucose intolerance with onset or first recognition during pregnancy. Gestational diabetes mellitus (GDM) is one of the most common complications of pregnancy and is associated with a substantially elevated risk of adverse health outcomes for both mothers and offspring. Physical activity and diet may contribute to the prevention of GDM and thus is crucial for dissecting the vicious circle involving GDM, childhood and adulthood obesity. Exercise has been shown to improve glycemic control. The mechanism of this improvement is mostly secondary to increasing tissue sensitivity to insulin. Low glycemic index foods release calories from the gut slowly and improve metabolism of carbohydrate. Avoidance of large meals with high percentage of simple carbohydrates. Three small meals with three snacks are preferred. Some women with the condition are even able to control their blood glucose levels through these things alone however, most will still need medications, such as insulin.

Keywords: exercise, diet, glucose intolerance during pregnancy.

सारांश–

गर्भावधि मधुमेह को गर्भावस्था के दौरान या शुरुआत में होने वाले ग्लूकोज असहिष्णुता के किसी भी स्तर के रूप में परिभाषित किया गया है। गर्भावधि मधुमेह (जीडीएम) गर्भावस्था के सबसे सामान्य जटिलताओं में से एक है और माता और संतान दोनों के लिए प्रतिकूल स्वास्थ्य परिणामों के साथ जुड़ा हुआ है। गर्भावस्था के दौरान होने वाले मधुमेह में माता इतनी पर्याप्त मात्रा में इन्सुलिन पैदा नहीं कर पाती, जिससे माता और शिशु दोनों की आवश्यकता की पूर्ति हो सके। शारीरिक गतिविधि और आहार, गर्भावधि मधुमेह की रोकथाम में योगदान कर सकते हैं और गर्भावधि मधुमेह बचपन और वयस्कता के मोटापे से जुड़े दुष्परिणामो को कम करने हेतु महत्वपूर्ण है। गर्भावस्था के दौरान किया जाने वाला व्यायाम निश्चित ही ग्लाइसेमिक कंट्रोल में सहायक है। कम ग्लाइसेमिक इंडेक्स वाले खाद्य पदार्थ आंत से कैलोरी को रिलीज करते हैं और कार्बोहाइड्रेट के चयापचय में सुधार करते हैं। अधिक मात्रा में कार्बोहायड्रेट युक्त भोजन का त्याग करना चाहिए। प्रायः तीन नाश्ते के साथ कम मात्रा में तीन बार भोजन का प्रयोग उपयोगी है। इस स्थिति में कुछ महिलाएं शारीरिक गतिविधि व्यायाम और आहार के जरिए अपने रक्त शर्करा के स्तर को नियंत्रित करने में सक्षम हैं।

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Literary Review

Evaluation of The Effect Of *Pathya Ahar* And *Vihar* On Gestational Diabetes Mellitus (GDM)

Dr. Preeti chouhan, Dr. Sunita Suman

Introduction of Gestational diabetes mellitus:

The term diabetes mellitus describes a metabolic disorder of multiple etiologies characterized by chronic hyperglycaemia with disturbances of carbohydrate, fat and protein metabolism resulting from defects in insulin secretion, insulin action or both. Gestational diabetes mellitus (GDM) a form of glucose intolerance that is diagnosed in some women during pregnancy resembles type 2 diabetes in several respects, involving a combination of relatively inadequate insulin secretion and responsiveness. Gestational diabetes occurs more frequently among African Americans, Hispanic/Latino Americans and American Indians. It is also more common among obese women and women with a family history of diabetes.

It occurs in about 2%–5% of all pregnancies and may improve or disappear after delivery. Gestational diabetes is fully treatable but requires careful medical supervision throughout the pregnancy. About 20%–50% of affected women develop type 2 diabetes later in life. Untreated gestational diabetes can damage the health of the fetus or mother. Risks to the baby include macrosomia (high birth weight), congenital cardiac and central nervous system anomalies, and skeletal muscle malformations. Increased fetal insulin may inhibit fetal surfactant production and cause respiratory distress syndrome. Hyperbilirubinemia may result from red blood cell destruction. In severe cases, perinatal death may occur. Metabolic changes are essential for the continuous supply of glucose and amino acid for the fetal growth as well as for meeting the increased physiological demand of the women during pregnancy, labour and lactation. Food intake and appetite are increased approximately 3.5 kg of fat is deposited, energy reserves of approximately 30,000 Kcal are established and 900gm. of new protein is synthesized by mother, fetus and placenta.

Physiological change in GDM

Physiological change in carbohydrate metabolism in pregnancy (Normal Glucose Regulation in Pregnancy)- Pregnancy is hyperlipidemic and glycosuric state. After mid pregnancy, resistance of insulin develops, due to placental production of anti insulin hormone like, human placental lactogen, Cortisol, Prolactin, Growth Hormone, estrogen and progesterone. The effect of these hormones cause low FBS with high PPBS, (b) Low renal threshold for glucose and increase Glomerular filtration rate leads to glycosuria (c) increased production of insulin and high fasting insulin that may lead to functional failure of the pancreas. The insulin receptor cannot full respond to insulin so glucose transporter become inactive. Glucose cannot enter into cells of the tissue especially muscle tissue and cause hyperglycemia. Insulin resistance is induced by tumour necrosis factor alpha and new protein called resistin that produced by adipose tissues.

High risk factor for GDM:

- Marked obesity
- Previous unexplained fetal demise
- Personal history of GDM
- Glycosuria
- Strong family history of diabetes

Low risk factor for GDM:

- Age <25 years
- Normal weight before pregnancy
- Ethnicity with low prevalence
- No known first degree relatives with diabetes
- No history of abnormal glucose tolerance
- No history of poor obstetric outcome

Gestational Diabetes Screening: Universal screening is advisable

- 1 hour 50 gm glucose load (GCT)
- Venous plasma glucose cut-offs
- 140 mg/dl
- 135 mg/dl
- 130 mg/dl screening thresholds for GDM with the 50 gram oral Glucose challenge test.

Threshold	Patient screening positive	sensitivity
140	14-18%	80%
130	20-25%	90%

Diagnosis of Gestational Diabetes

- Three Hour 100 gm glucose tolerance test (GTT)
- Not necessary if GCT is >200mg/dl on screening
- Two abnormal values required for the diagnosis of gestational diabetes
- Currently two diagnostic criteria acceptable

Competing Criteria:

NDDG, 1979	Carpentar and Coustan, 1982
FBS 105	FBS 95
1 hour 190	1 hour 180
2 hour 165	2 hour 155
3 hour 145	3 hour 140

Pre-Pregnancy Management

Preconceptional care begins at the end of a pregnancy with GDM.

– Tight glucose control (HbA1c)
– Assessment and treatment of associated medical problems
  - Hypertension,
  - Renal disease,
  - Retinal disease
  - Heart disease
– Folic acid
– Assessment of family, financial and personal resources to help achieve a successful pregnancy

Gestational diabetes mellitus in Ayurveda :

In Ayurveda Madhumeha disease can be correlated with Diabetes Mellitus. Though there is no direct reference of Gestational Diabetes but *Garbha Vriddhi is described as a complication.*

Management of GDM:

Ayurveda helps in limiting the maternal and fetal complications. Herbs are helpful as a supportive treatment along with the modern medicine under supervision. Generally beneficial, congenial, purifying and suppressive dietetics and mode of life, not causing loss of *doshas* and *dhatus* but capable of decreasing the increased *doshas* and *dhatus* should be used.

Dietary And Lifestyle Risk Factors Overview

In the past decades efforts to identify risk factors for GDM have increased, in part because of the escalating prevalence of diabetes and obesity worldwide. Subsequently, several potentially novel risk factors for GDM have been identified. A few studies have provided some suggestive evidence of dietary factors both before or during pregnancy that are related to GDM risk [1,2].

***Pathya Ahar* (Dietary factors) during pregnancy and GDM risk**

- Earlier studies on the effect of diet during pregnancy, suggested that polyunsaturated fat intake may be protective against glucose intolerance in pregnancy, and high intake of saturated fat may be detrimental[3].
- higher intake of fat and lower intake of carbohydrates may be associated with increased risk of GDM and impaired glucose tolerance[4].
- In addition, in a prospective study of pregnant women, lower plasma vitamin C[5] and vitamin D concentrations[6] in early pregnancy were

significantly associated with increased GDM risk.

Pre pregnancy diet and GDM risk

Pregravid intake of red and processed meats were both significantly and positively associated with GDM risk, because body iron overload has been postulated to promote insulin resistance and increase the risk of type 2 diabetes [7]. Hence iron in red meat might also contribute to the increased risk of GDM. More recently, iron supplements and increased iron stores in pregnant women without iron deficiency were related to an increased risk of GDM [8]. However, the association between processed meat and GDM risk remained strong after adjustment for heme iron.

Dietary fiber and glycemic index. Pregravid consumption of dietary fiber (ie, total, cereal, and fruit fiber) was significantly and inversely associated with GDM risk [9]. In contrast, dietary glycemic load was positively associated with GDM risk. The glycemic index is a relative measure of the glycemic effect of the carbohydrates in different foods [10].

Sugar-sweetened beverages. Sugar-sweetened beverages are the leading source of added sugars in diets [11]. In human studies, a high-sugar diet decreases insulin sensitivity [12] and insulin secretion [13].

Adjustment for age, parity, race, physical activity, smoking, alcohol intake, pre pregnancy BMI, dietary pattern, intake of sugar-sweetened cola was positively associated with the risk of GDM, whereas no significant association was shown for other sugar-sweetened beverages and diet beverages.

Diet plan for GDM

- Eat three small meals and two or three snacks at regular times every day. Do not skip meals or snacks. Carbohydrates should be 40%-45% of the total calories with breakfast and a bedtime snack containing 15-30 grams of carbohydrates.
- In morning sickness, eat 1-2 servings of crackers, cereal, or pretzels before getting out of bed. Eat small, frequent meals throughout the day and avoid fatty, fried, and greasy foods. If you take insulin and have morning sickness, make sure you know how to treat low blood sugar.
- Choose foods high in fibre such as whole-grain breads, cereals, pasta, rice, fruits, and vegetables. All pregnant women should eat 20-35 grams of fibre a day.
- Fats should be less than 40% of calories with less than 10% consumed being from saturated fats.
- Drink at least 8 cups (or 64 ounces) of liquids per day.

Pathya Vihar

Exercise

Regular exercise during pregnancy can improve posture and decrease some common discomforts such as backaches and fatigue. Being fit during pregnancy means safe, mild to moderate exercise at least three times a week. But, regardless of gestational diabetes, every pregnant woman should consult with her health care provider before beginning an exercise program.

Since both insulin and exercise lower blood sugar, patient should follow these additional exercise guidelines to avoid a low blood glucose reaction:

- Eat one serving of fruit or the equivalent of 15 grams of carbohydrate for most activities lasting 30 minutes. If you exercise right after a meal, eat this snack after exercise. If you exercise 2 hours or more after a meal, eat the snack before exercise.

Yoga

Yoga is used for a variety of immunological, neuromuscular, psychological, and pain conditions. Recent studies indicate that it may be effective in improving pregnancy, labour and birth outcomes. Most recognized for its potential to create balance along emotional, mental, physica and spiritual dimensions. yoga is a comprehensive system that uses physical postures (*asana*), breathing exercises (*pranayama*), concentration and meditation (*dharana* and *dhyana*), and contemplative practice.

Yoga improves all sorts of metabolism in the body. So diabetics should perform different types of yoga. Yoga now-a-days has attracted the attention of Western people. Common *Aasana* that can be very effective in Diabetes are *Padmasan, Shalabhasan, Suryanamaskar, pawan muktasan, Dhanurasan. parvatasan, vakrasan, konasan etc.*[14]

This budding body of work suggests that

improvements were observed on psychological domains during pregnancy and labour (e.g., quality of life and self-efficacy), on physical and pain measures during labour (e.g., discomfort and pain), and on birth variables (e.g., birth weight and number of preterm births).

Physical activity and GDM Available data from epidemiologic and clinical studies among non pregnant individuals support the thesis that physical activity can influence glucose homeostasis through its direct or indirect effects on insulin sensitivity and secretion[15] .By increasing insulin sensitivity and improving glucose tolerance via several Mechanisms, physical activity has a beneficial effect on many aspects of insulin resistance syndromes[16]. In addition to this acute effect, longer-term, even relatively modest, increases in habitual physical activity induce adaptations that can profoundly affect glucose tolerance and potentially decrease GDM risk. women who exercised weekly for_30 min at some time during pregnancy had a lower risk of GDM, although this result was shown for only morbidly obese women (BMI.33).

Conclusions

The spreading of epidemics of obesity and diabetes worldwide, the increase in the incidence of GDM during recent years, and the short-term and long-term adverse health outcomes for both women and offspring associated with GDM highlight the significance of preventing GDM among women at high risk. several modifiable factors, in particular pregravid body adiposity, recreational physical activity before and during pregnancy, and pregravid dietary patterns related to GDM risk. Collectively, these study suggest an additional potential benefit of the adoption or continuation of a healthy diet and active lifestyle for women having GDM.

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Literary Review

Role of self-care in management of Type 2 diabetes mellitus

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Abstract

Diabetes mellitus (DM) is a chronic progressive metabolic disorder characterized by hyperglycemia mainly due to absolute (Type 1 DM) or relative (Type 2 DM) deficiency of insulin hormone. World Health Organization estimates that more than 346 million people worldwide have DM. This number is likely to more than double by 2030 without any intervention. The needs of diabetic patients are not only limited to adequate glycemic control but, self-monitoring of glycemic control is a cornerstone of diabetes care that can ensure patient participation in achieving and maintaining specific glycemic targets. It also correspond with preventing complications; disability limitation and rehabilitation.

Diet is one of the major factors now linked to a wide range of diseases including diabetes. The amount and type of food consumed is a fundamental determinant of human health. The health benefits of a low-fat vegetarian diet such as portions of vegetables, grains, fruits, and legumes (excluding animal products) is seen in people with type-2 diabetes. It was reported that exercises has a positive role in maintaining the glycemic level with increasing the insulin sensitivity and also improving cardiovascular risk factors regard to Type 2 DM.

The majority of patients with diabetes can significantly reduce the chances of developing long-term complications by improving self-care activities. Self-monitoring provides information about current glycemic status, allowing for assessment of therapy and guiding adjustments in diet, exercise and medication in order to achieve optimal glycemic control. Irrespective of weight loss, engaging in regular physical activity has been found to be associated with improved health outcomes among diabetics.

Key Words-Glycemic control, Exercise, Type 2 DM, Self-monitoring

सारांश–

डायबिटीज मेलिटस एक जीर्ण चपापचय से संबंधित व्याधि है जो की शरीर मैं इन्सुलिन हार्मोन की कमी या उसका उपयोग नहीं कर ने से संबंधित है विश्व स्वास्थ्य संघठन के अनुसार विश्व मे 346 मिलियन व्यक्ति इस व्याधि से पीड़ित है तथा यह संख्या वर्ष 2030 तक दुगनी हो जाने की संभावना है। डायबिटीज रोगियों को केवल ग्लिसेमिक नियंत्रण के लिए स्वयं के नियंत्रण, उचित देखरेख व मार्ग दर्शन की भी जरुरत है।

यह डायबिटीज के रोकथाम, उपद्रव आदि मे भी सहायक होगी। आहार एक बहुत महत्वपूर्ण कारक है आहार की मात्रा तथा जो आहार खाया जा रहा है उसका सीधा संबंध स्वास्थ्य से है कम वसा युक्त शाकाहारी आहार जैसे सब्जियाँ, अनाज, फल, दाल आदि डायबिटीज मेलिटस के नियंत्रण में उपयोगी है विभिन्न अनुसन्धानों मै यह भी देखा गया है की व्यायाम का सम्बन्ध ग्लिसेमिक लेवल को नियंत्रित करने, इन्सुलिन की सक्रियता को बनाये रखने मे महत्वपूर्ण है। डायबिटीज के रोगी यदि अपने रक्त शर्करा स्तर को स्वयं की देखरेख व मार्ग दर्शन मे नियंत्रित करते है तो वह डायबिटीज मेलिटस जैसी व्याधि पर नियंत्रण व वेहतर स्वास्थ्य को प्राप्त कर सकते है।

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Literary Review

Role of self-care in management of Type 2 diabetes mellitus

Dr. Bhawana Mittal, Dr. Anita Sharma

Introduction:-

Diabetes mellitus or type-2 diabetes, is one of the major non-communicable and fastest growing public health problems in the world. Diabetes mellitus (DM) is a chronic progressive metabolic disorder characterized by hyperglycemia mainly due to absolute (Type 1 DM) or relative (Type 2 DM) deficiency of insulin hormone. World Health Organization estimates that more than 346 million people worldwide have DM[1]. This number is likely to more than double by 2030 without any intervention. The needs of diabetic patients are not only limited to adequate glycemic control but also correspond with preventing complications; disability limitation and rehabilitation. There are seven essential self-care behaviors in people with diabetes which predict good outcomes namely

- ✓ healthy eating,
- ✓ being physically active,
- ✓ monitoring of blood sugar,
- ✓ compliant with medications,
- ✓ good problem-solving skills,
- ✓ healthy coping skills and
- ✓ Risk-reduction behaviors.

All these seven behaviors have been found to be positively correlated with good glycemic control, reduction of complications and improvement in quality of life.

Self-monitoring of glycemic control is a cornerstone of diabetes care that can ensure patient participation in achieving and maintaining specific glycemic targets. The most important objective of monitoring is the assessment of overall glycemic control and initiation of appropriate steps in a timely manner to achieve optimum control. Self-monitoring provides information about current glycemic status, allowing for assessment of therapy and guiding adjustments in diet, exercise and medication in order to achieve optimal glycemic control.

Diet & Diabetes:-

Diet is one of the major factors now linked to a wide range of diseases including diabetes. The amount and type of food consumed is a fundamental determinant of human health.

Diet is individualized depending on age, weight, gender, health condition, and occupation etc

Objectives of dietary treatment of diabetes

The aims of dietary treatment of diabetes are:

- To achieve optimal blood glucose concentrations.
- To achieve optimal blood lipid concentrations.
- To provide appropriate energy for reasonable weight, normal growth, and development, including during pregnancy and lactation.
- To prevent, delay, and treat diabetes-related complications.
- To improve health through balanced nutrition.

Carbohydrate

Carbohydrate should be take in the form of Starch (polysaccharides) such as maize, rice, beans, bread, potatoes etc and Do not take In the form of Glucose, dextrose, fructose All refined sugars such as glucose, sucrose, and their products (soft drinks, sweets, toffees, etc.) and honey should be avoided, except during severe illness or episodes of hypoglycemia. These foods contain simple sugar, which is easily absorbed causing rapid rise in blood sugar. Non-nutritive sweeteners, e.g., Canderel, saccharine, NutraSweet, aspartame are suitable sugar substitutes for diabetic subjects.

Fat

- Saturated and trans fats raise blood cholesterol

levels, while unsaturated fats lower blood cholesterol. Saturated fats are solid at room temperature and are usually of animal origin. They are found in meats, whole milk, dairy products, butter, and hard margarines.[2] Trans fats are found in baked and pre-packaged foods. Hydrogenation is a process that changes liquid vegetable oil into a solid fat such as hard margarine. The hydrogenation process changes some of the good fats into cholesterol-raising saturated and trans fats[3]. People with diabetes are at a greater risk of developing or have already high levels of fats in their heart and blood vessels.

- Remove skin and trim fat before cooking (50-100 g or 2-4 oz). See the milk fat (MF) of all dairy products. Use skim or 1% milk products and low-fat cheese (less than 20% MF), or choose fortified soy products. Reduce your total fat intake (less than 25% - 35% of your daily calories). To achieve this, always try to choose low fat foods and avoid fried foods. Limit saturated and trans fats to less than 10% of your daily calories. Try to always choose unsaturated fats such as olive and canola oils and non-hydrogenated margarine (in moderation)[4].

Whole grain

Observational studies have found that diets rich in whole-grain foods are associated with improved insulin sensitivity. This effect may be partly mediated by significant levels of magnesium and cereal fiber in the whole-grain foods. Persons with elevated blood glucose may experience an improvement in insulin resistance and lower fasting blood glucose levels after they have consumed whole grains. People consuming about three servings per day of whole-grain foods are 20% to 30% less likely to develop type 2 diabetes than low consumers (3 servings per week).

Legumes

Legumes contain slowly digested carbohydrate and have a high fiber content, they are expected to improve glycemic control and reduce incident diabetes. In a large prospective study, an inverse association was seen between the intake of total legumes, peanuts, soybeans, and other legumes by Chinese women, and the incidence of type 2 diabetes mellitus, after adjustment for BMI and other factors. The risk of type 2 diabetes was 38% and 47% lower, for those consuming a high intake of total legumes and soybeans, respectively, compared to a low intake.

Fruits & Vegetables

Being a part of a balanced diet, fruits play a vital role in human nutrition by supplying the necessary growth regulating factors essential for maintaining normal health. They have been especially valuable for their ability to prevent vitamin C and vitamin A deficiencies. Fruits and vegetables are good source of vitamins, minerals, flavonoids (anti-oxidants), saponins, polyphenols, carotenoids (vitamin A-like compounds), isothiocyanates (sulfur-containing compounds), and several types of dietary fibers. The fruits and vegetables not only prevent malnutrition but also help in maintaining optimum health through a host of chemical components that are still being identified, tested, and measured Diets that are high in insoluble fiber may offer the best protection against this disease. Fruits and vegetables are high in cellulose-a type of insoluble fiber. Diets that are high in fiber may be able to help in the management of diabetes. Soluble fiber delays glucose absorption from the small intestine and thus may help prevent the spike in blood glucose levels that follow a meal or snack.

Salt

Blood pressure may also be present with your diabetes. Limiting how much salt you eat can help keep your blood pressure low. Decrease the amount of salt you add during cooking and reduce salt in recipes, before adding salt at the table, taste first, try seasoning your food with (salt-free) herbs, spices, and garlic. Lemon juice brings out the natural saltiness of foods. Avoid processed foods that are high in salt (sodium chloride) such as canned or packaged foods and condiments such as mustard, watch for “Na” (sodium) on food labels. Chips, pretzels, and other such snacks are very high in salt

Smoking &Alcohol:- should be avoided by diabetic patients.

Here are 4 simple steps to managing your blood sugar

1. Begin a vegan diet: Avoid animal products

Animal products contain fat, especially saturated fat, which is linked to heart disease, insulin resistance, and certain forms of cancer. These products also contain cholesterol and, of course, animal protein. It may surprise you to learn that diets high in animal protein can aggravate kidney problems and calcium losses. Animal products never provide fiber or healthful carbohydrates. A *vegan* diet is one that contains no animal products at all. Therefore, you'll have to avoid red meat, poultry, fish, dairy products, and eggs.

2. Low-fat, vegetarian diets are ideal for people with diabetes

The health benefits of a low-fat vegetarian diet such as portions of vegetables, grains, fruits, and legumes (excluding animal products) in people with type-2 diabetes. The vegan diet is based on American Diabetes Association (ADA) guidelines; factors in a vegetarian diet that could have a beneficial effect on blood lipid levels include the higher amounts of fiber, nuts, soy, and plant sterols and lower levels of saturated fat. Vegetarians consume between 50% and 100% more fiber than non vegetarians and vegans have higher intakes than lactoovo-vegetarians. Soluble fiber has been repeatedly shown to lower total and LDL cholesterol levels and to reduce risk of coronary heart disease (17). A diet high in nuts significantly lowers total and LDL cholesterol levels (102). Soy isoflavones may play a role in reducing LDL cholesterol levels and in reducing the susceptibility of LDL to oxidation.

3. Food preparation

Avoid adding sugar during cooking. use Splenda (sucralose) instead of sugar if baking or cooking, use low-fat and low sugar sauces and marinades, use reduced-fat cooking methods such as barbecuing, boiling, roasting, and steaming and avoid frying and deep-fat frying.

4. Breakfast, Lunch & Dinner

The breakfast should be 1/3 fruit, 1/3 starchy fiber foods (multigrain bread and cereal products), and 1/3 protein (nuts, eggs, tofu, beans, lentils, low-fat dairy products). The lunch and dinner plates should be 1/2 vegetables, 1/4 starchy fiber foods, and 1/4 protein. Choose whole grains, such as whole wheat pasta, whole wheat bread, and brown rice to increase fiber intake.

Role of Physical Activity or exercise

Regular physical activity helps the body cells take up glucose and thus lower blood glucose levels. Regular physical activity also helps with weight loss as well as controlling blood cholesterol and blood pressure[6]. Important benefits of Yoga, Pranayam, Meditation and a regular aerobic exercise program in diabetes management include decreased need for insulin, decreased risk of obesity, and decreased risk for heart disease. Exercise decreases total cholesterol, improves the ratio of low-density lipoprotein (LDL) to high-density lipoprotein cholesterol (HDL), and reduces blood triglycerides[7]. It may also decrease blood pressure and lower stress levels. Walking is one of the easiest and healthiest ways to exercise. This is one activity that anyone can do for a lifetime without special equipment and with little risk of injury[8].

Discussion:-

Diabetes mellitus is well known for having macro and micro vascular complications, which later proceeds to life-threatening conditions.Diet is an important aspect in the management of a diabetic patient. The health benefits of a low-fat vegetarian diet such as portions of vegetables, grains, fruits, and legumes (excluding animal products) in people with type-2 diabetes. The vegan diet is based on American Diabetes Association (ADA) guidelines[9]; Factors in a vegetarian diet that could have a beneficial effect on blood lipid levels include the higher amounts of fiber, nuts, soy, and plant sterols and lower levels of saturated fat. Soluble fiber has been repeatedly shown to lower total and LDL cholesterol levels and to reduce risk of coronary heart disease.[10] A diet high in nuts significantly lowers total and LDL cholesterol levels It was reported that exercise has a positive role in maintaining the glycemic level, increasing the insulin sensitivity and also improving cardiovascular risk factors with regard to T2DM. Exercise not only improves the glycemic control, but it can also improve the insulin sensitivity and restore the

diabetic associated complication Exercise is a valuable therapeutic strategy for T2DM as it has beneficial effects on physiological parameters and reduces the metabolic risk factors in insulin resistance diabetes mellitus exercise improves the physiological parameters, including glycemic control, fasting blood-glucose level and lipid profile.

Conclusion:-

In conclusion, effective lifestyle modifications include low fat vegetarian diet and exercise has a positive role in maintaining the glycemic level, increasing the insulin sensitivity and also improving cardiovascular risk factors with regard to T2DM. Exercise causes prolonged glucose homeostasis and continuous glucose monitoring (CGM) technology is important to assess exercise associated hypoglycemia. The majority of patients with diabetes can significantly reduce the chances of developing long-term complications by improving self-care activities. Self-monitoring provides information about current glycemic status, allowing for assessment of therapy and guiding adjustments in diet, exercise and medication in order to achieve optimal glycemic control. Irrespective of weight loss, engaging in regular physical activity has been found to be associated with improved health outcomes among diabetics.

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Literary Review

Pathya For Diabetic Patients: A Compile Study

*Dr. Kapil Patil, *Dr. Rakesh Nagar

Abstract-

Introduction : Sedentary life style and stressful mental conditions in the present scenario have invited many life style disorders. Diabetes mellitus (DM) can be compared with Madhumaeh as described in *Ayurveda* classics, which literally means excessive urine with sweet taste like honey. *Madhumeha* caused by vitiation of *vatadosha* has many clinical similarities to Diabetes mellitus. Diabetes is one of the non-communicable disease and rapidly emerging as a major health care problem. Despite of recent progression in medical science, several challenges still exist in the management of diabetes that requires special attention to develop unexplored fields of medical knowledge. *Ayurveda* offers comprehensive safe and effective approaches to manage such conditions. **Material and Methods** : various *Ayurveda* classics and studies published in journals related to *pathya aahar* for *Madhumeha* are reviewed and analyzed. **Result**: Evidences from various studies shows that *pathya aahar* for *Madhumeha* is very much effective to control and manage the disease. **Conclusion**: Analysis of classical references and various experimental studies of *pathya aahar* for *Madhumeha* is effective to control and manage the disease and also prevents the complication of the disease by correcting the metabolic function of agni and whole body systems. *Kashyapa* said Food is the medicine (*mahabheshajya*) is true for present scenario.

Key words : *Pathya aahar*, *Madhumeha*, Diabetes mellitus, *Agni*, *Mahabheshajya*.

सारांश–

प्रस्तावना–वर्तमान स्थिति में गतिहीन जीवन शैली और तनावपूर्ण मानसिक स्थिति ने कई जीवन शैली संबंधी विकारो को आमंत्रित किया है। डायबिटीज मेलाइटस की तुलना मधुमेह के साथ की जा सकती है जैसा की आयुर्वेद संहिताओं मे वर्णित है, जिसका शाब्दिक अर्थ है शहद की तरह अत्यधिक मूत्र त्याग। मधुमेह यह एक नान कम्यूनिकेबल रोग है जो तेजी से एक प्रमुख स्वास्थ्य देखभाल समस्या के रूप में उभर रहा है। चिकित्सा विज्ञान में हाल की प्रगति के बावजूद, कई चुनौतियाँ अब भी मधुमेह के प्रबंधन में मौजूद है, जिसमे चिकित्सा ज्ञान के अनपेक्षित क्षेत्र को विकसित करने के लिए विशेष ध्यान देने की आवश्यकता है। आयुर्वेद ऐसी स्थिति के प्रबंधन के लिए एक व्यापक, सुरक्षित और प्रभावी दृष्टिकोण प्रदान करता है। **सामग्री और विधि**– विभिन्न आयुर्वेद संहिताओं तथा विभिन्न अध्ययन पत्रिकाओं मे मधुमेह से संबंधित पथ्य आहार की समीक्षा एवं विश्लेषण किया गया। **परिणाम**– विभिन्न अध्ययनो के साक्ष्य से पता चलता है कि मधुमेह के लिए पथ्य आहार रोग को नियंत्रित और प्रबंधित करने के लिए प्रभावी है। **निष्कर्ष**– शास्त्रीय संदर्भो का विश्लेषण और विभिन्न प्रयोगात्मक अध्ययनो से पता चलता है कि पथ्य आहार यह मधुमेह को नियंत्रित करने के लिए प्रभावी है तथा अग्नि और संपूर्ण शरीर प्रणालियो की चयापचय कार्य को नियंत्रित कर यह इसके परिणाम स्वरूप होने वाली जटिलताओ को भी नियंत्रित करने मे सक्षम है।

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Literary Review

Pathya For Diabetic Patients: A Compile Study

Dr. Kapil Patil, Dr. Rakesh Nagar

Introduction: Diabetes mellitus has been known for centuries as disease related to sweetness. Persons with diabetes have excessive sugar in blood and urine, Sedentary life style and stressful mental conditions nowadays have called for many life style disorders, foremost amongst them being Diabetes Mellitus. Diabetes mellitus (DM) in Ayurveda is referred to as *Madhumeha* or *Kshaudrameha*, which literally means excessive urine with sweet taste like honey. The number of people suffering from diabetes all over the world is increasing progressively. Amongst the twenty types of *Pramehas* described in *Ayurveda*, *Madhumeha* caused by vitiation of *vatadosha* has many clinical similarities to Diabetes mellitis. Diabetes mellitus has gained gigantic disgrace in recent times as it is fast becoming the world's largest silent killer. India has been projected by WHO as the country with the fastest growing population of Diabetic patients. It is estimated that between 1995 to 2025 diabetic patients in India will increase by 195%.

Madhumeha consists of two words-'*madhu* and *meha*' where '*madhu*' denotes sweetness and '*meha*' stands for urination. So, the disease in which the urination is having urine quality concordant with *madhu* (honey) in its colour, taste, smell and consistency called along with the pathognomonic features of *Prameha* (i.e. increased frequency and quantity of urine) is *Madhumeha*. On the other hand, the word "Diabetes mellitus" consists of two words - Diabetes and mellitus, diabetes word derived from Greek which means 'excessive discharge of urine' and word mellitus derived from Latin word *mellitus*, meaning 'mellite' (i.e. sweetened with honey; honey-sweet). The Latin word comes from *mell*, which comes from *mel*, meaning "honey"; sweetness; pleasant thing. So, above descriptions shows that word *Madhumeha* and Diabetes mellitus have similar literal meanings. *Madhumeha* is discussed under twenty types of *Prameha* in *Ayurvedic* classics. The synonyms mentioned for diabetes in Ayurvedic classics are – *Madhumeha, Ojomeha, Ksaudrameha.*

Madhumeha is one of the four types modern lifestyle trends over a few decades are heavily inclined towards a comfortable life style, with decreasing opportunities for physical exertion, prominence of processed foods in daily diet, irregular sleeping patterns, and a predominantly sedentary life, has lead to the emergence of various lifestyle disorders like obesity, diabetes mellitus, hypertension, cardiac diseases etc. Diabetes mellitus, which is a syndrome of impaired carbohydrate, fat, and protein metabolism caused by either lack of insulin secretion or decreased sensitivity of the tissues to insulin (Guyton) (3) has been found to be the major cause for mortality and has been declared a pandemic by W.H.O. in the present day scenario. The classical symptoms of untreated diabetes are loss of weight, polyuria (frequent urination), polydipsia (increased thirst) and polyphagia (increased hunger). Diabetes is a serious metabolic disorder with micro- and macrovascular complications that result in significant morbidity and mortality. Diabetes increases the risk of long-term complications. Diabetes mellitus is a metabolic disorder, i.e. it is caused due to the malfunctioning of the pancreas, which is responsible for the production of the hormone insulin.

***Samprapthi* (Pathogenesis)**[1] - *Kapha* undergoing increase by the etiological factors, reaches various *dooshyas* like *rasa* (plasma), *rakta* (blood) etc., As there is a *shaithilyata* (looseness) in the body and it being fluid predominant, spreads all over the body and gets vitiated, while spreading it gets mixed with *medas* (fat–adipose tissue), *mamsa* (muscle) and *kleda* (body fluids). Body fluids which got vitiated draw them to the urinary bladder and produces *prameha*; similarly the *Pitta* affects them, *Vata* also brings about vitiation in them and produce *prameha*.

The beta cells of the islets of *Langherhans* in pancreatic gland are responsible for the secretion of the hormone insulin. Among other things, insulin is extremely essential for the proper utilization of the carbohydrates in our body. If insulin is absent due

to a metabolic disorder, or if it is not performing its functions properly, then these carbohydrates accumulate in the bloodstream in the form of glucose. The glucose then collects in the urine, which is in fact one of the primary characteristics diabetes mellitus is identified with. Hence, this can be said to be either a deficiency in the production of insulin by the pancreas, or A dysfunction of the insulin produced by the pancreas.

***Sampraphti ghatakas*[2]**

- *Dosha* (humur) – *vata, pitta, kapha*
- *Dushya–meda, mamsa, kleda, rakta, vasa, majja, lasika, rasa and ojas*
- *Srotas* (channel) – *mootravaha*
- *Srotodusti – atipravrutti*
- *Agni – dhatvagni*
- *Udhbhavasthana – kostha*
- *Vyaktasthana–mootravahasrotas* (urinary tract)

***Nidan* (Etiology)[3]** - Addiction to the pleaser, laughing, unwholesome sleep, sedentary habit, lying down posture, lack of exercise, continue cheerfulness and excessive mental and physical works**.**

Classification[4]

I. *Prameha* is classified aetiologically in to *Sahaja* (Hereditary) and *Apathyanimittaja* (Unwholesome things – food and exercise etc,). *Sahaja* means due to *Matapitabheeja-doshakruit*

(Chromosomal defect from parents).

II. According to physical management

i. *Apatharpanauthajaprameha* describing the lean diabetic

ii. *Santharpanauthaja prameha* relating the obese diabetic

III. According to the doshic causes, these *pramehas* are classified as twenty types:

i.*Vatajapramehas* – There are totally four *vatajapramehas* which are *Vasameha, Majjameha, Hastimeha, Madhumeha.*

ii.*Pittajapramehas* – There are totally six *pittajapramehas.*

iii.*Kaphajapramehas* – There are totally ten *kaphajapramehas.*

Out of these, diabetes mellitus is termed as *madhumeha.* It is one of the four *Vatajapramehas.*

Premonitory symptoms - There are accumulation of dirt on the teeth (mouth, eyes, nose, and ears), a feeling of burning sensation in the palms and soles, stickiness of the skin all over the body, thirst and a sweet taste in the mouth etc., and *moothramadhuryam* (sweetness of urine).[5]

Clinical symptoms - *Acharya Madhava* described term *Prameha* as "*Prakarshena Prabhutam Prachuram Varam Varam Va Mehati Mutratyagam Karoti Yasmina Roge Sa Pramehah*"[6] which means repeated (*Prakarsha*) excessive (*Prabhoota*) and turbid urination in terms of frequency, quantity etc. *Prabhootha mutrata* (Poly uria), Avila *mutrata* (Turbid Urine) and *Medodushti lakshanas are* the main symptoms of *prameha.*[7] In Modern science these symptoms are mentioned[8]

1 Polyuria (Excessive Urine)

2 Polyphagia (Excessive Hunger)

3 Polydipsia (Excessive Thirst)

4 Exhaustion/Tiredness

5 Body ache

6 Giddiness

7 Polyneuritis (Numbness/Tingling)

8 Visual disturbance

Prognosis[9] - *Charaka* describes the prognosis in three categories

1. *Sadhya*–Curable: Patients who have diagnosed early in the onset, those who are *sthoola* (obese) and the origin of their disease in *apathyaja.*

2. *Yapya*–Palliable: *Pittajaprameha* and certain types of *kaphajapramehas* are however helps control with treatment (palliative management).

3. *Asadhya*–Incurable: *Vataja* describes the incurable version of prameha and inherited diabetes, a *krisha* (lean) patinet who is suffering with *Sahaja* veriety.

Material and Methods: Various *Ayurveda classics* and studies published in journals, Pubmed

and through Internet sources related to Role of *pathya aahar-vihar* in *Madhumeha* are reviewed and analyzed.

Result: "The doctor of future will no longer treat the human frame with drugs but rather will cure and prevent disease with nutrition" *Pathya aahar-vihar* mentioned in the *Ayurvedic* classics and studies published in journals, Pubmed for the *Madhumeha* having significant results in disease

Pathya aahar* for *Madhumeha :[10]

1- Vegetables (*karela*, *atasi*, *sarso*, *methi* etc.)

2- Green leafy vegetables

3- Spices

4- High fiber foods

5- Fruits with low glycemic index – apples, pears, guava, apricots, avocados etc.

6- Fenugreek seeds

7- Maansarasa of *vishkir* and *pratud* class of birds

8- Use of *haldi*, *trifala* and *koshnajala*

Pathya vihar* for *Madhumeha:[11]

1- Vyayam/ Exercise *2- Aasana-Pranayam*

3- Samyaka nidra *4- Brahmhachrya*

Is highly significant in diabetes to control and manage the sugar level

Discussion: Patients with diabetes or normal subjects who follows the proper life style and dietary regimen can easily control or prevent the life style disorder "*Madhumeha*"

The *katu-tikta rasa pradhan aahar* controls the vitiation of *kapha dosha* and *ushna guna pradhan aahar* controls the vitiation of *vata dosha* and also controls the *meda dhatu dushti* ultimately which controls the progression of disease.

Conclusion: Proper dietary and life style management control and prevent the disease *Madumeha*/Diabetes mellitus which proves the classical saying

"*Pathye sati gadartasya kimaushad nishevanam*
Pathye asati gadartasya kimaushad nishevanam".

(*vaidyak jeevan- lolimbraj*).

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Literary Review

A Review Study Of Preventive And Curative Antidiabetic Herbal Drugs

*Dr. Bhanu Pratap Singh, **Prof. Om Prakash Dadhich, ***Dr. Deepa

Abstract

Diabetes mellitus is a dreadful disease found in all parts of the world and is becoming a serious threat to mankind health. India has today become the diabetic capital of the world with over 20 million diabetics and this number is likely to increase to 57 million by 2025. Diabetes mellitus is a group of metabolic diseases characterized by high blood sugar (glucose) levels that result from defects in insulin secretion, or action, or both. It is frequently associated with the development of micro and macro vascular diseases which include neuropathy, nephropathy, cardiovascular and cerebrovascular diseases. The disease is associated with reduced quality of life and increased risk factors for mortality and morbidity. It is mentioned by *Acharya* as *Madhumeha* in our classics.

There are lots of chemical agents available to control and to treat diabetic patients, but total recovery from diabetes has not been reported up to this date. Oral hypoglycemic agents like sulphonylureas and biguanides are still the major players in the management of the disease but there is growing interest in herbal remedies due to the side effects associated with the oral hypoglycemic agents. Alternative to these synthetic agents, many herbal plants with hypoglycaemic properties are known from across the world. The World Health Organization (WHO) has listed 21,000 plants, which are used for medicinal purposes around the world. The present review article is undertaken to explore the antidiabetic effects of various herbs in diabetes.

Key words:- Diabetes, hypoglycaemia, *Madhumeha*.

सारांश–

मधुमेह दुनिया के सभी भागों में पाए जाने वाली एक भयानक व्याधि है और मानव जाति के स्वास्थ्य के लिए एक गंभीर खतरा बनता जा रहा है। आज भारत 20 लाख से अधिक मधुमेह के साथ दुनिया की मधुमेह की राजधानी बन गया है और यह संख्या 2025 तक 57 लाख तक पहुंचने की संभावना है। मधुमेह चयापचय रोगों का एक समूह है जिसमें रक्त शर्करा (ग्लूकोज) का स्तर उच्च होता है जो इंसुलिन स्राव या क्रिया या दोनों में विकृति से होता है जिसमें न्यूरोपैथी, नेफ्रोपैथी, कार्डियोवास्कुलर और सेरेब्रोवास्कुलर रोग शामिल हैं। बीमारी जीवन की कम गुणवत्ता के साथ जुड़ी होती है और मृत्यु दर और विकृति के लिए खतरे में वृद्धि होती है। आचार्यों ने हमारे ग्रन्थो में मधुमेह के वातज प्रमेह के भेद के रूप में उल्लेख किया है।

मधुमेह के रोगियों को नियंत्रित करने और इलाज के लिए बहुत सारे रासायनिक द्रव्य उपलब्ध हैं, लेकिन अब तक उनसे विशेष लाभ प्राप्त नहीं हुआ है। हाइपोग्लाइसेमिक एजेंट जैसे सल्फोनील्यूरस और बिगुलियाइड्स अभी भी इस बीमारी के प्रबंधन में प्रमुख हैं, लेकिन हाइपोग्लाइसेमिक एजेंटों से जुड़े दुष्प्रभावों के कारण हर्बल उपचार में रुचि बढ़ रही है। इन सिंथेटिक एजेंटों के लिए वैकल्पिक, हाइपोग्लाइकेमिक गुणों वाले कई हर्बल पौधों को दुनिया भर मे जाना जाता है। विश्व स्वास्थ्य संगठन (डब्ल्यूएचओ) ने 21,000 पौधों को सूचीबद्ध किया है, जो दुनिया भर के औषधीय उद्देश्यों के लिए उपयोग किया जाता है। मधुमेह में विभिन्न जड़ी–बूटियों के एंटीबायोटिक प्रभावों का पता लगाने के लिए वर्तमान समीक्षात्मक लेख प्रस्तुत किया गया है।

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Literary Review

A Review Study Of Preventive And Curative Antidiabetic Herbal Drugs

Dr. Bhanu Pratap Singh, Dr. Om Prakash Dadhich, Dr. Deepa

Introduction

Sedentary life style and stressful mental conditions nowadays have called for many distressing diseases, foremost amongst them being Diabetes Mellitus – a perfect example for a lifestyle disorder. DM is a very common health problem. DM is also known to increase the risk of heart, cerebral and vascular diseases by two to sevenfold. Many of the complications of DM are preventable or can be delayed by appropriate treatment of hyperglycemia and other cardiovascular risk factors.

Diabetes mellitus (DM) in *Ayurveda* is referred to as *Madhumeha* or *Kshaudrameha* or *Ojomeha* which literally means "excessive urine with sweet taste like honey," or *Dhatupak janya vikriti*, which means a disease caused by a defective metabolism leading to derangement in body tissue (seven *Dhatus*) transformation process. Historically, *Ayurvedic* texts have described 20 types of *Pramehas* based on the predominant *Doshas* (10 *Kaphaja*, 6 *Pittaja* and 4 *Vataja*) and physical characteristics of the urine (e.g. volume, colour, odour, taste, sediments, solid particles, presence of seminal fluid, and mucus)[1]. The urine is discharged in excessive quantities and is generally turbid. *Madhumeha* is one of the four types of *Vataja Prameha*[2].

Acharya Madhava described term *Prameha* as "*Prakarshena Prabhutam Prachuram Varam Varam Va Mehati Mutratyagam Karoti Yasmina Roge Sa Pramehah*" which means repeated (*Prakarsha*), excessive (*Prabhoota*) and turbid urination in terms of frequency, quantity etc[3]. *Madhumeha* is included among the *Astamaharoga* (eight major disorders) in *Charaka*.[4]

Synthetic drugs like sulphonyl ureas and biguanides may be effective in controlling the blood sugar level for some time, but they may cause side effects like hypoglycemia, nausea, vomiting, cholestatic jaundice, and other health problems. Most type 2 DM patients initially respond to lowering of blood glucose levels (BGLs), but after some time about 20% become resistant and do not benefit from these agents. Presently, there is growing interest in herbal remedies due to the side effects associated with the oral hypoglycemic agents (therapeutic agent) for the treatment of diabetes mellitus. So the traditional herbal medicines are mainly used which are obtained from plants, it plays important role in the management of diabetes mellitus[4]. In recent years, herbal medicines have started to gain importance as a source of hypoglycemic agents.

Material and methods-

References related to proposed title are collected from classical texts of *Ayurveda*. Various publications, internet, books, research papers and proceedings of seminars related to the topic are collected.

Antidiabetic herbal drugs

Traditional daily management of DM is carried out with appropriate palliative herbal therapies. These herbs are selected based on their properties, such as *Rasa* (taste), *Guna* (physicochemical properties), *Veerya* (potency), *Vipaka* (postdigestive effect) and *Prabhava* (unique action), that are necessary to bring about balance in *Doshas*. Our literature search has revealed more than 52 herbs that have been shown to have hypoglycemic activity. Out of these some drugs are described here-

1. Gymnema sylvestere (Gurmara, Family-Asclepiadaceae)

Gymnema sylvestere (GS), a plant popularly known as *gurmara* (meaning sugar destroyer), is derived from a large woody climber that grows in the hills of Bihar, Orissa Madhya Pradesh. The whole plant, seeds, leaves and roots are taken as a powder or as a decoction in combination with other herbs.

The alcohol extract of GS (known as GS4) contains gymnemic acids (a chemically complex mixture of saponins and gurmarin, a polypeptide of 35 amino acids).[5] Hypoglycemic activity and mechanism of action of GS have been examined in many animal studies. Several clinical studies have been also done to help authenticate the hypoglycemic effect of GS.

The hypoglycemic (blood sugar lowering) action of *Gymnema* leaves was first documented in the late 1920s.[6] The *Gymnema* sylvestre crude extracts and its isolated compound dihydroxy gymnemic triacetate shows hypoglycaemic effect against streptozotocin induced diabetic rats in dose and time dependent manner[7]. This hypoglycaemic effect was due to the ability of gymnemic acids to delay the glucose absorption in the blood. Gymnemic acid molecules fill the receptor location in the absorptive external layers of the intestine thereby preventing the sugar molecules absorption by the intestine, which results in low blood sugar level[8] and also the reduced glucose levels are exerted by the crude extract due to the presence of dihydroxy gymnemic triacetate had the ability to release the insulin by the stimulation of a regeneration process and revitalization of the remaining beta cells.[9,10]

2. *Momordica charantia* (*Karela*, Family-Cucurbitaceae)

Momordica charantia (MC), a climbing vine, has been widely used in *Ayurveda* as anantidiabetic, abortificient (whole plant), antirheumatic, and carminative (fruits) agent. It is believed to cure deranged *Kapha* and *Pitta*. The gourd produced by the plant, known as *Karela* in India (bitter gourd), is traditionally eaten as a fried vegetable or as a fresh juice. Vicine, charantin, and polypeptide-P are the three known compounds present in bitter gourd that are responsible for its antidiabetic properties. Together they increase glucose uptake and glycogen synthesis in the liver, muscle, and adipose tissue and also improve glucose tolerance. Possible mechanisms include increased insulin secretion, tissue glucose uptake, liver muscle glycogen synthesis, glucose oxidation, and decreased hepatic gluconeogenesis.[11]

3. *Trigonella foenum-graecum* (Methika, Family-Leguminoseae)

Trigonella foenum-graecum (TF) known as *Methika* in *Hindi* and *Sanskrit*, is an erect aromatic herb and it is 30 to 50 cm tall. It is widely cultivated in many parts of India. Its seeds are used in cooking as well as treating diabetes, whereas its leaves are eaten as a vegetable. The endosperm of the seed is rich in galactomannan (14 to 15%), young seeds contain carbohydrates and sugar, and mature seeds yield amino acids and fatty acids on hydrolysis. TF seeds also contain carotene, vitamins, and saponins.[12] It is used in *Ayurveda* as a diuretic, tonic, carminative, astringent. It is also used to treat diabetes, colic, dysentery, diarrhoea, coughing, dropsy, rheumatism, rickets, and anemia.[13]

The antidiabetic activity of TF has been confirmed in both animal models[14] and type 2 DM patients[15]. It is also postulated that the hypoglycemic activity of TF is not concentrated in any one TF constituents based on the retention of this activity in all TF parts such as the seed powder, methanol extract, and the residue remaining after the methanol extraction.[16] Chemical analysis of the water extract of the methanol extractive-free residue of the seed powder showed that the major active constituent of the soluble dietary fiber is a galactomannan. Additional hypoglycaemic compounds were also present in other fractions. It was also shown that TF seed powder increased the glycolysis and decreased the gluconeogenesis activities back to normal levels in the liver and kidney in diabetic rats.[17]

4 *Coccinia indica* (Kunduru, Family-Cucurbitaceae)

Coccinia indica (CI), known as *Bimbi* or *Kundura* in India, is a climber with branched leaves. Fresh juice from leaves, stem, and roots is used to treat diabetes, glycosuria, enlarged glands, and skin diseases. The leaves and stem are also used as an antispasmodic and expectorant agent in bronchitis.[18]

The hypoglycemic activity of CI has been reported in several animal studies.[19] In fact, the oral administration of pectins isolated from CI produced a significant hypoglycaemic effect in normal rats.[20] The ethanol extract in glucose-loaded normal rats showed similar results.[21] It was suggested that the hypoglycemic activity of CI is mediated through an insulin secretagogue effect or through an influence on enzymes involved in glucose metabolism.[22]

5. Pterocarpus marsupium (Vijaysara, Family-Papilionoidae)

Pterocarpus marsupium (PM), also known as Indian kino tree or Malabar kino, is a moderate to large deciduous tree up to 30 m in height. Cold, aqueous extract of the wood is used to treat diabetes. The paste of the leaves is used to treat abscesses and skin diseases, and the extract of the bark is used as an astringent for gum and is also useful in diarrhoea. The hypoglycemic activity of PM has been reported in several studies. Three phenolic constituents from PM were isolated and studied for their hypoglycemic activity: marsupin, ptersupin, and pterostilbene. This hypoglycaemic effect in diabetic rats was comparable with that of 1,1-dimethylbiguinide.[23]

6. Syzygium cumini (Jamuna, Family-Myretaceae)

It consists of mature fruits and dried seeds of *Syzygium cumini* belonging to family Myretaceae. Chemical constituents are anthocyanin, delphinidine-3-gentiobioside, malvidin- 3-laminaribiosidea and ferulic acid. Many research studies have shown that *Jamuna* is one of the best medicines for treatment of diabetes. Diabetics are advised to consume 1 tsp of this *Jamuna* seed powder in empty stomach early morning.

7. Azadirachta indica (Neem, Family-Maliaceae)

Neem leaf extracts and seeds are used as an active ingredient as an effective cure for diabetes. It has been scientifically proven after a number of tests and research, that *Neem* parts have high efficacy in treating the disease. Natural *Neem* tablets are being manufactured and exported the world over for treating large number of patients. *Neem* leaf extracts improve the blood circulation by dilating the blood vessels and also helpful in reducing the need for hypoglycaemic drugs.

8 Mangifera indica (Mango, Family-Anacardiaceae)

The leaves of this plant are used as an antidiabetic agent in Nigerian folk medicine, although when aqueous extract given orally did not alter blood glucose level in either normoglycemic or streptozotocin induced diabetic rats. However, antidiabetic activity was seen when the extract and glucose were administered simultaneously and also when the extract was given to the rats 60 min before the glucose. The results indicate that aqueous extract of Mangifera indica possess hypoglycemic activity. This may be due to an intestinal reduction of the absorption of glucose.[24]

9. Tinospora cordifolia (*Guduchi*, Family-Menispermaceae)

It is a large, glabrous, deciduous climbing shrub. It is widely distributed throughout India and commonly known as Guduchi. Oral administration of the extract of Tinospora cordifolia roots for 6 weeks resulted in a significant reduction in blood and urine glucose and in lipids in serum and tissues in alloxan diabetic rats. T. cordifolia is widely used in Indian *Ayurvedic* medicine for treating diabetes mellitus.

10. Acacia arabica (Babbul, Family-Mimosoideae)

It is found all over India mainly in the wild habitat. The plant extract acts as an antidiabetic agent by acting as secretagouge to release insulin. It induces hypoglycemia in control rats but not in alloxanized animals. Powdered seeds of Acacia arabica when administered (2, 3 and 4 g/kg body weight) to normal rabbits induced hypoglycemic effect by initiating release of insulin from pancreatic beta cells.

11. Allium cepa (Onion, Family- Lilliaceae)

Various ether soluble fractions as well as insoluble fractions of dried onion powder show anti-hyperglycemic activity in diabetic rabbits. Allium cepa is also known to have antioxidant and hypolipidaemic activity. Administration of a sulfur containing amino acid from Allium cepa, S-methyl cysteine sulphoxide (SMCS) (200 mg/kg for 45 days) to alloxan induced diabetic rats significantly controlled blood glucose. When diabetic patients were given single oral dose of 50 g of onion juice, it significantly controlled post prandial glucose levels.[25]

12 Allium sativum (Garlic, Family-Lilliaceae)

This is a perennial herb cultivated throughout India. Allicin, a sulfur-containing compound is responsible for its pungent odour and it has been

shown to have significant hypoglycemic activity.[26] This effect is thought to be due to increased hepatic metabolism, increased insulin release from pancreatic beta cells and/or insulin sparing effect. Aqueous homogenate of garlic (10 ml/kg/day) administered orally to sucrose fed rabbits (10 g/kg/day in water for two months) significantly increased hepatic glycogen and free amino acid content, decreased fasting blood glucose, and triglyceride levels in serum in comparison to sucrose controls.

13. Ocimum sanctum (*Tulsi*, Family-Lamiaceae)

Since ancient times, this plant is known for its medicinal properties. The aqueous extract of leaves of Ocimum sanctum showed the significant reduction in blood sugar level in both normal and alloxan induced diabetic rats. Significant reduction in fasting blood glucose, uronic acid, total amino acid, total cholesterol, triglyceride and total lipid indicated the hypoglycemic and hypolipidemic effects of Tulsi in diabetic rats. Oral administration of plant extract (200 mg/kg) for 30 days led to decrease in the plasma glucose level by approximately 9.06 and 26.4% on 15 and 30 days of the experiment respectively.

Discussion

Mechanism of Action of Herbal Anti-diabetics

The antidiabetic activity of herbs depends upon variety of mechanisms. The mechanism of action of herbal anti-diabetic may be in following way-

1) Inhibition in renal glucose reabsorption.
2) Stimulation of insulin secretion from beta cells of islets or/and inhibition of insulin degradative processes.
3) Insulin resistance reduction.
4) Providing certain necessary elements like calcium, zinc, magnesium, manganese and copper for the ß -cells.
5) Regenerating and/or repairing pancreatic ß cells.
6) Increasing the size and number of cells in the islets of Langerhans.
7) Stimulation of insulin secretion.
8) Stimulation of glycogenesis and hepatic glycolysis.
9) Inhibition of ß-galactocidase and a-glucocidase.
10) Protective effect on the destruction of the ß cells.
11) Improvement in digestion along with reduction in blood sugar and urea.
12) Prevention of pathological conversion of starch to glucose.

Conclusion

Herbal therapy for diabetes has been followed all over the World successfully. Scientific explanation of several Indian plant species has proved the efficacy in reducing the sugar level could be considered as of potential therapeutic value. Thus many different plants have been used individually or in formulations for treatment of diabetes. Mostly herbal drugs are well tolerated by the patient, having fewer unintended consequences and fewer side effects than other hypoglycaemic agents and may be safer to use. Herbal drugs are more effective for long-standing health complaints that don't respond well to traditional medicine. Cost of herbal drugs is much less than prescription medications. Herbs tend to be inexpensive compared to drugs.

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Instructions for authors

I. Ownership of the Journal

The Journal of Ayurveda is the official publication of the National Institute of Ayurveda, Jaipur under Ministry of AYUSH, New Delhi.

It is published quarterly i.e. January-March, April-June, July-September and October-December.

II. Authorship and Contributorship

II.A. Byline Authors

An "author" is generally considered to be someone who has made substantive intellectual contributions to a published study, and biomedical authorship continues to have important academic, social, and financial implications. (1) In the past, readers were rarely provided with information about contributions to studies from those listed as authors and in acknowledgments. (2) Some journals now request and publish information about the contributions of each person named as having participated in a submitted study, at least for original research. Editors are strongly encouraged to develop and implement a contributorship policy, as well as a policy on identifying who is responsible for the integrity of the work as a whole.

While contributorship and guarantorship policies obviously remove much of the ambiguity surrounding contributions, it leaves unresolved the question of the quantity and quality of contribution that qualify for authorship. The International Committee of Medical Journal Editors has recommended the following criteria for authorship; these criteria are still appropriate for those journals that distinguish authors from other contributors.

- Authorship credit should be based on 1) substantial contributions to conception and design, or acquisition of data, or analysis and interpretation of data; 2) drafting the article or revising it critically for important intellectual content; and 3) final approval of the version to be published. Authors should meet conditions 1, 2, and 3.
- When a large, multi-center group has conducted the work, the group should identify the individuals who accept direct responsibility for the manuscript (3). These individuals should fully meet the criteria for authorship defined above and editors will ask these individuals to complete journal-specific author and conflict of interest disclosure forms. When submitting a group author manuscript, the corresponding author should clearly indicate the preferred citation and should clearly identify all individual authors as well as the group name. Journals will generally list other members of the group in the acknowledgements. The National Library of Medicine indexes the group name and the names of individuals the group has identified as being directly responsible for the manuscript.
- Acquisition of funding, collection of data, or general supervision of the research group, alone, does not justify authorship.
- All persons designated as authors should qualify for authorship, and all those who qualify should be listed.
- Each author should have participated sufficiently in the work to take public responsibility for appropriate portions of the content.

Some journals now also request that one or more authors, referred to as "guarantors," be identified as the persons who take responsibility for the integrity of the work as a whole, from inception to published article, and publish that information.

Increasingly, authorship of multi-center trials is attributed to a group. All members of the group who are named as authors should fully meet the above criteria for authorship.

The order of authorship on the byline should be a joint decision of the co-authors. Authors should be prepared to explain the order in which authors are listed.

II.B. Contributors Listed in Acknowledgments

All contributors who do not meet the criteria for authorship should be listed in an acknowledgments section. Examples of those who might be acknowledged include a person who provided purely technical help, writing assistance, or a department chair who provided only general support. Editors should ask authors to disclose whether they had writing assistance and to identify the entity that paid for this assistance. Financial and material support should also be acknowledged.

Groups of persons who have contributed materially to the paper but whose contributions do not justify authorship may be listed under a heading such as "clinical investigators" or "participating investigators," and their function or contribution should be described-for example, "served as scientific advisors," "critically reviewed the study proposal," "collected data," or "provided and cared for study patients."

Because readers may infer their endorsement of the data and conclusions, all persons must give written permission to be acknowledged.

II.C. Conflicts of Interest

Conflict of interest exists when an author (or the author's institution) or reviewer has financial or personal relationships that inappropriately influence (bias) his or her actions (also known as dual commitments, competing interests, or competing loyalties). These relationships vary from those with negligible potential to those with great potential to influence judgment, and not all relationships represent true conflict of interest. The potential for conflict of interest can exist whether or not an individual believes that the relationship affects his or her scientific judgment. Financial relationships (such as employment, consultancies, stock ownership, honoraria, paid expert testimony) are the most easily identifiable conflicts of interest and the most likely to undermine the credibility of the journal, the authors, and of science itself. However, conflicts can occur for other reasons, such as personal relationships, academic competition, and intellectual passion.

All participants in the peer review and publication process must disclose all relationships that could be viewed as presenting a potential conflict of interest.

II.D.1. Potential Conflicts of Interest Related to Individual Authors' Commitments

When authors submit a manuscript, whether an article or a letter, they are responsible for disclosing all financial and personal relationships that might bias their work. To prevent ambiguity, authors must state explicitly whether potential conflicts do or do not exist. Authors should do so in the manuscript on a conflict of interest notification page that follows the title page, providing additional detail, if necessary, in a cover letter that accompanies the manuscript.

Authors should identify Individuals who provide writing assistance and disclose the funding source for this assistance.

Investigators must disclose potential conflicts to study participants and should state in the manuscript whether they have done so.

II.D.2. Potential Conflicts of Interest Related to Project Support

Increasingly, individual studies receive funding from commercial firms, private foundations, and government. The conditions of this funding have the potential to bias and otherwise discredit the research.

Scientists have an ethical obligation to submit creditable research results for publication. Moreover, as the persons directly responsible for their work, researchers should not enter into agreements that interfere with their access to the data and their ability to analyze it independently, to prepare manuscripts, and to publish them. Authors should describe the role of the study sponsor(s), if any, in study design; in the collection, analysis, and interpretation of data; in the writing of the report; and in the decision to submit the report for publication. If the supporting source had no such involvement, the authors should so state. Biases potentially introduced when sponsors are directly involved in research are analogous to methodological biases of other sorts. Include Information about the sponsor's involvement in the methods section.

Sign a statement such as, "I had full access

to all of the data in this study and I take complete responsibility for the integrity of the data and the accuracy of the data analysis."

II.E. Privacy and Confidentiality

II. E.1. Patients and Study Participants

Patients have a right to privacy that should not be infringed without informed consent. Identifying information, including patients' names, initials, or hospital numbers, should not be published in written descriptions, photographs, and pedigrees unless the information is essential for scientific purposes and the patient (or parent or guardian) gives written informed consent for publication. Informed consent for this purpose requires that a patient who is identifiable be shown the manuscript to be published.

Identifying details should be omitted if they are not essential. Complete anonymity is difficult to achieve, however, and informed consent should be obtained if there is any doubt. For example, masking the eye region in photographs of patients is inadequate protection of anonymity.

Informed consent is a must in prospective trials involving human beings. When informed consent has been obtained it should be indicated in the manuscript.

II.E.2. Authors and Reviewers

Manuscripts will be reviewed with due respect for authors' confidentiality. Confidentiality may have to be breached if dishonesty or fraud is alleged but otherwise will be honored.

Information about manuscripts (including their receipt, content, status in the reviewing process, criticism by reviewers, or ultimate fate) will not be disclosed to anyone other than the authors and reviewers. This includes requests to use the materials for legal proceedings.

Reviewer comments should not be published or otherwise made public without permission of the reviewer, author, and editor.

The reviewers' identity will not be revealed to the author or anyone else without the reviewer's permission.

Reviewers' comments will be sent to other reviewers of the same manuscript, which helps reviewers learn from the review process, and reviewers may be notified of the editor's decision.

II.F. Protection of Human Subjects and Animals in Research

When reporting experiments on human subjects, authors should indicate whether the procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2000. If doubt exists whether the research was conducted in accordance with the Helsinki Declaration, the authors must explain the rationale for their approach, and demonstrate that the institutional review body explicitly approved the doubtful aspects of the study. When reporting experiments on animals, authors should be asked to indicate whether the institutional and national guide for the care and use of laboratory animals was followed.

III. Publishing and Editorial Issues Related to Publication in Biomedical Journals

III.A. Obligation to Publish Negative Studies

Editors will consider seriously for publication any carefully done study of an important question, relevant to readers, whether the results are negative (that is, convincingly allow the null hypothesis to be accepted) or positive (that is, allow the null hypothesis to be rejected).

III.B. Corrections, Retractions and "Expressions of Concern"

Editors assume initially that authors are reporting work based on honest observations. Nevertheless, two types of difficulty may arise.

First, errors may be noted in published articles that require the publication of a correction or erratum of part of the work. The corrections will appear on a numbered page, be listed in the contents page, include the complete original citation, and link to the original article and vice versa online. It is conceivable that an error could be so serious as to vitiate the entire body of the work, but this is unlikely and will be handled by editors and authors

on an individual basis. Such an error should not be confused with inadequacies exposed by the emergence of new scientific information in the normal course of research. The latter requires no corrections or withdrawals.

The second type of difficulty is scientific fraud. If substantial doubts arise about the honesty or integrity of work, either submitted or published, it is the editor's responsibility to ensure that the question is appropriately pursued, usually by the authors' sponsoring institution. However, it is not ordinarily the task of editors to conduct a full investigation or to make a determination; that responsibility lies with the institution where the work was done or with the funding agency. The editor should be promptly informed of the final decision, and if a fraudulent paper has been published, the journal will print a retraction. If this method of investigation does not result in a satisfactory conclusion, the editor may choose to conduct own investigation. As an alternative to retraction, the editor may choose to publish an expression of concern about aspects of the conduct or integrity of the work.

The retraction or expression of concern, so labeled, will appear on a numbered page in a prominent section of the print journal as well as in the online version, be listed in the contents page, and included in its heading the title of the original article. It will not simply be a letter to the editor. Ideally, the first author will be the same in the retraction as in the article, although under certain circumstances the editor may accept retractions by other responsible persons. The text of the retraction should explain why the article is being retracted and include a full original citation reference to it.

The validity of previous work by the author of a fraudulent paper cannot be assumed. Editors may ask the author's institution to assure them of the validity of earlier work published in their journals or to retract it. If this is not done editors may choose to publish an announcement expressing concern that the validity of previously published work is uncertain.

III.C. Copyright

The copyright status of articles in a given journal can vary: some content cannot be copyrighted (articles written by employees of the governments in the course of their work, for example).

III.D. Overlapping Publications

III.D.1. Duplicate Submission

The Journal will not consider manuscripts that are simultaneously being considered by other journals.

III.D.2. Redundant Publication

Redundant (or duplicate) publication is publication of a paper that overlaps substantially with one already published in print or electronic media.

Readers of primary source periodicals, whether print or electronic, deserve to be able to trust that what they are reading is original unless there is a clear statement that the article is being republished by the choice of the author and editor. The bases of this position are international copyright laws, ethical conduct, and cost-effective use of resources. Duplicate publication of original research is particularly problematic, since it can result in inadvertent double counting or inappropriate weighting of the results of a single study, which distorts the available evidence.

This journal does not wish to receive papers on work that has already been reported in large part in a published article or is contained in another paper that has been submitted or accepted for publication elsewhere, in print or in electronic media. This policy does not preclude the journal considering a paper that has been rejected by another journal, or a complete report that follows publication of a preliminary report, such as an abstract or poster displayed at a professional meeting. Nor does it prevent the journals considering a paper that has been presented at a scientific meeting but not published in full or that is being considered for publication in a proceedings or similar format.

When submitting a paper, the author must always make a full statement to the editor about all submissions and previous reports that might be regarded as redundant or duplicate publication of the same or very similar work. The author must alert the editor if the manuscript includes subjects about

which the authors have published a previous report or have submitted a related report to another publication. Any such report must be referred to and referenced in the new paper. Copies of such material should be included with the submitted paper.

III.D.3. Acceptable Secondary Publication

Certain types of articles, such as guidelines produced by governmental agencies and professional organizations, may need to reach the widest possible audience. In such instances, editors will choose to publish material that is also being published in other journals. Secondary publication for various other reasons, in the same or another language, especially in other countries and/or states, is justifiable, and can be beneficial, provided all of the following conditions are met.

1. The authors have received approval from the editors of both journals; the editor concerned with secondary publication must have a photocopy, reprint, or manuscript of the primary version.
2. The priority of the primary publication is respected by a publication interval of at least one week.
3. The paper for secondary publication is intended for a different group of readers; an abbreviated version could be sufficient.
4. The secondary version faithfully reflects the data and interpretations of the primary version.
5. The footnote on the title page of the secondary version informs readers, peers, and documenting agencies that the paper has been published in whole or in part and states the primary reference. A suitable footnote might read: "This article is based on a study first reported in the [title of journal, with full reference]."

   Permission for such secondary publication should be free of charge.
6. The title of the secondary publication should indicate that it is a secondary publication (complete republication, abridged republication, complete translation, or abridged translation) of a primary publication. Of note, the National Library of Medicine does not consider translations to be "republications," and does not cite or index translations when the original article was published in a journal that is indexed in MEDLINE.

III.D.4. Competing Manuscripts Based on the Same Study

Two kinds of competing submissions will be considered: submissions by coworkers who disagree on the analysis and interpretation of their study, and submissions by coworkers who disagree on what the facts are and which data should be reported.

Setting aside the unresolved question of ownership of the data, the following general observations may help editors and others dealing with these problems.

III. D.4.a. Differences in Analysis or Interpretation

If the dispute centers on the analysis or interpretation of data, the authors should submit a manuscript that clearly presents both versions. The difference of opinion should be explained in a cover letter. The normal process of peer and editorial review of the manuscript may help the authors to resolve their disagreement regarding analysis or interpretation.

If the dispute cannot be resolved and the study merits publication, both versions will be published. Options include publishing two papers on the same study, or a single paper with two analyses or interpretations. In such cases it would be appropriate for the editor to publish a statement outlining the disagreement and the journal's involvement in attempts to resolve it.

III.D.4. b. Differences in Reported Methods or Results

If the dispute centers on differing opinions of what was actually done or observed during the study, the journal editor will refuse publication until the disagreement is resolved. Peer review cannot be expected to resolve such problems. If there are allegations of dishonesty or fraud, editors will inform the appropriate authorities; authors will be notified of editor's intention to report a suspicion of research misconduct.

III.D.5. Competing Manuscripts Based on the Same Database

Editors may sometimes receive manuscripts from separate research groups that have analyzed the same data set, e.g., from a public database. The manuscripts may differ in their analytic methods, conclusions, or both. Each manuscript will be considered separately. Where interpretations of the same data are very similar, it is reasonable but not necessary for editors to give preference to the manuscript that was received earlier. However, editorial consideration of multiple submissions may be justified in this circumstance, and there may even be a good reason for publishing more than one manuscript because different analytical approaches may be complementary and equally valid.

III.E. Correspondence

As a mechanism for submitting comments, questions, or criticisms about published articles, as well as brief reports and commentary unrelated to previously published articles. This will likely, but not necessarily, take the form of a correspondence section or column. The authors of articles discussed in correspondence should be given an opportunity to respond, preferably in the same issue in which the original correspondence appears. Authors of correspondence will be asked to declare any competing or conflicting interests.

Published correspondence may be edited for length, grammatical correctness, and journal style.

Although editors have the prerogative to sift out correspondence material that is irrelevant, uninteresting, or lacking in cogency, they have a responsibility to allow a range of opinion to be expressed. The correspondence column will not be used merely to promote the journal's, or the editors', point of view. In all instances, editors will make an effort to screen out discourteous, inaccurate, or libelous statements.

In the interests of fairness and to keep correspondence within manageable proportions, journal may want to set time limits for responding to articles and correspondence, and for debate on a given topic. Journal has also set policy with regard to the archiving of unedited correspondence that appears on line. These policies should be published both in print and electronic versions of the journal.

III.F. Supplements, Theme Issues, and Special Series

Supplements are collections of papers that deal with related issues or topics, are published as a separate issue of the journal or as part of a regular issue, and are usually funded by sources other than the journal's publisher. Supplements can serve useful purposes: education, exchange of research information, ease of access to focused content, and improved cooperation between academic and corporate entities. Because funding sources can bias the content of supplements through the choice of topics and viewpoints, this journal adopts the following principles. These same principles apply to theme issues or special series that have external funding and/or guest editors.

1. The journal editors take full responsibility for the policies, practices, and content of supplements, including complete control of the decision to publish all portions of the supplement. Editing by the funding organization will not be permitted.
2. The journal editors will retain the authority to send supplement manuscripts for external peer review and to reject manuscripts submitted for the supplement.
3. The journal editors will approve the appointment of any external editor of the supplement and take responsibility for the work of the external editor.
4. The sources of funding for the research, publication, and the products the funding source make that are considered in the supplement should be clearly stated and prominently located in the supplement, preferably on each page. Whenever possible, funding should come from more than one sponsor.
5. Secondary publication in supplements (republication of papers previously published elsewhere) will be clearly identified by the citation of the original paper. Supplements will avoid redundant or duplicate publication. Supplements will not republish research results, but the republication of guidelines or other material in the public interest might be appropriate.

IV. Manuscript Preparation and Submission

IV.A. Preparing a Manuscript for Submission

Editors and reviewers spend many hours reading manuscripts, and therefore appreciate receiving with manuscripts that are easy to read and edit. Much of the information in journals' instructions to authors is designed to accomplish that goal in ways that meet each journal's particular editorial needs. The guidance that follows provides a general background and rationale for preparing manuscripts for any journal.

IV.A.1.a. General Principles

The text of observational and experimental articles is usually (but not necessarily) divided into sections with the headings Introduction, Methods, Results, and Discussion. This so-called "IMRAD" structure is not simply an arbitrary publication format, but rather a direct reflection of the process of scientific discovery. Long articles may need subheadings within some sections (especially the Results and Discussion sections) to clarify their content. Other types of articles, such as case reports, reviews, and editorials, are likely to need other formats.

Publication in electronic formats has created opportunities for adding details or whole sections in the electronic version only, layering information, cross-linking or extracting portions of articles, and the like. Authors need to work closely with editors in developing or using such new publication formats and should submit material for potential supplementary electronic formats for peer review.

Double spacing of all portions of the manuscript including the title page, abstract, text, acknowledgments, references, individual tables, and legends-and generous margins make it possible for editors and reviewers to edit the text line by line, and add comments and queries, directly on the paper copy. If manuscripts are submitted electronically, the files should be double spaced, because the manuscript may need to be printed out for reviewing and editing.

During the editorial process reviewers and editors frequently need to refer to specific portions of the manuscript, which is difficult unless the pages are numbered. Authors should therefore number all of the pages of the manuscript consecutively, beginning with the title page.

IV.A.1.b. Reporting Guidelines for Specific Study Designs

Research reports frequently omit important information. The general requirements listed in the next section relate to reporting essential elements for all study designs. Authors are encouraged in addition to consult reporting guidelines relevant to their specific research design. For reports of randomized controlled trials authors should refer to the CONSORT statement. This guideline provides a set of recommendations comprising a list of items to report and a patient flow diagram.

IV.A.2. Title Page

The title page should carry the following information:

1. The title of the article. Concise titles are easier to read than long, convoluted ones. Titles that are too short may, however, lack important information, such as study design (which is particularly important in identifying randomized controlled trials). Authors should include all information in the title that will make electronic retrieval of the article both sensitive and specific.
2. Authors' names and institutional affiliations.
3. The name of the department(s) and institution(s) to which the work should be attributed.
4. Disclaimers, if any.
5. Corresponding authors. The name, mailing address, telephone and fax numbers, and e-mail address of the author responsible for correspondence about the manuscript (the "corresponding author;" this author may or may not be the "guarantor" for the integrity of the study as a whole, if someone is identified in that role. The corresponding author should indicate clearly whether his or her e-mail address is to be published.
6. The name and address of the author to whom requests for reprints should be addressed.
7. Source(s) of support in the form of grants,

equipment, drugs, or all of these.

8. Word counts. A word count for the text only (excluding abstract, acknowledgments, figure legends, and references) allows editors and reviewers to assess whether the information contained in the paper warrants the amount of space devoted to it, and whether the submitted manuscript fits within the journal's word limits. A separate word count for the Abstract is also useful for the same reason.
9. The number of figures and tables. It is difficult for editorial staff and reviewers to tell if the figures and tables that should have accompanied a manuscript were actually included unless the numbers of figures and tables that belong to the manuscript are noted on the title page.

IV.A.3. Conflict of Interest Notification Page

To prevent the information on potential conflict of interest for authors from being overlooked or misplaced, it is necessary for that information to be part of the manuscript. It should therefore also be included on a separate page or pages immediately following the title page.

IV.A.4. Abstract and Key Words

An abstract should follow the title page. The abstract should provide the context or background for the study and should state the study's purposes, basic procedures (selection of study subjects or laboratory animals, observational and analytical methods), main findings (giving specific effect sizes and their statistical significance, if possible), and principal conclusions. It should emphasize new and important aspects of the study or observations.

Because abstracts are the only substantive portion of the article indexed in electronic database and the only portion many readers read, authors need to be careful that abstracts reflect the content of the article accurately.

3 to 10 key words or short phrases that capture the main topics of the article. These will assist indexers in cross-indexing the article and may be published with the abstract. Terms from the Medical Subject Headings (MeSH) list of Index Medicus should be used; if suitable MeSH terms are not yet available for present terms may be used.

IV.A.5. Introduction

Provide a context or background for the study (i.e., the nature of the problem and its significance). State the specific purpose or research objective of, or hypothesis tested by, the study or observation; the research objective is often more sharply focused when stated as a question. Both the main and secondary objectives should be made clear, and any pre-specified subgroup analyses should be described. Give only strictly pertinent references and do not include data or conclusions from the work being reported.

IV.A.6. Methods

The Methods section should include only information that was available at the time the plan or protocol for the study was written; all information obtained during the conduct of the study belongs in the Results section.

IV.A.6.a. Selection and Description of Participants

Describe your selection of the observational or experimental participants (patients or laboratory animals, including controls) clearly, including eligibility and exclusion criteria and a description of the source population. Because the relevance of such variables as age and sex to the object of research is not always clear, authors should explain their use when they are included in a study report; for example, authors should explain why only subjects of certain ages were included or why women were excluded. The guiding principle should be clarity about how and why a study was done in a particular way. When authors use variables such as race or ethnicity, they should define how they measured the variables and justify their relevance.

IV.A.6.b. Technical information

Identify the methods, apparatus (give the manufacturer's name and address in parentheses), and procedures in sufficient detail to allow other workers to reproduce the results. Give references to established methods, including statistical methods see below; provide references and brief descriptions for methods that have been published but are not well known; describe new or substantially modified methods, give reasons for using them, and evaluate

their limitations. Identify precisely all drugs and chemicals used, including generic name(s), dose(s), and route(s) of administration.

Authors submitting review manuscripts should include a section describing the methods used for locating, selecting, extracting, and synthesizing data. These methods should also be summarized in the abstract.

IV.A.6.c. Statistics

Describe statistical methods with enough detail to enable a knowledgeable reader with access to the original data to verify the reported results. When possible, quantify findings and present them with appropriate indicators of measurement error or uncertainty (such as confidence intervals). References for the design of the study and statistical methods should be to standard works when possible (with pages stated). Define statistical terms, abbreviations, and most symbols. Specify the computer software used.

IV.A.7. Results

Present your results in logical sequence in the text, tables, and illustrations, giving the main or most important findings first. Do not repeat in the text all the data in the tables or illustrations; emphasize or summarize only important observations. Extra or supplementary materials and technical detail can be placed in an appendix where it will be accessible but will not interrupt the flow of the text; alternatively, it can be published only in the electronic version of the journal.

When data are summarized in the Results section, give numeric results not only as derivatives (for example, percentages) but also as the absolute numbers from which the derivatives were calculated, and specify the statistical methods used to analyze them. Restrict tables and figures to those needed to explain the argument of the paper and to assess its support. Use graphs as an alternative to tables with many entries; do not duplicate data in graphs and tables. Avoid non-technical uses of technical terms in statistics, such as “random” (which implies a randomizing device), “normal,” “significant,” “correlations,” and “sample.”

Where scientifically appropriate, analyses of the data by variables such as age and sex should be included.

IV.A.8. Discussion

Emphasize the new and important aspects of the study and the conclusions that follow from them. Do not repeat in detail data or other material given in the Introduction or the Results section. For experimental studies it is useful to begin the discussion by summarizing briefly the main findings, then explore possible mechanisms or explanations for these findings, compare and contrast the results with other relevant studies, state the limitations of the study, and explore the implications of the findings for future research and for clinical practice.

Link the conclusions with the goals of the study but avoid unqualified statements and conclusions not adequately supported by the data. In particular, authors should avoid making statements on economic benefits and costs unless their manuscript includes the appropriate economic data and analyses. Avoid claiming priority and alluding to work that has not been completed. State new hypotheses when warranted, but clearly label them as such.

IV.A.9. References

IV.A.9.a. General Considerations Related to References

Although references to review articles can be an efficient way of guiding readers to a body of literature, review articles do not always reflect original work accurately. Readers should therefore be provided with direct references to original research sources whenever possible. On the other hand, extensive lists of references to original work on a topic can use excessive space on the printed page. Small numbers of references to key original papers will often serve as well as more exhaustive lists, particularly since references can now be added to the electronic version of published papers, and since electronic literature searching allows readers to retrieve published literature efficiently.

Avoid using abstracts as references. References to papers accepted but not yet published should be designated as “in press” or “forthcoming”; authors should obtain written permission to cite such papers as well as verification that they have

been accepted for publication. Information from manuscripts submitted but not accepted should be cited in the text as "unpublished observations" with written permission from the source.

Avoid citing a "personal communication" unless it provides essential information not available from a public source, in which case the name of the person and date of communication should be cited in parentheses in the text. For scientific articles, authors should obtain written permission and confirmation of accuracy from the source of a personal communication.

Some journals check the accuracy of all reference citations, but not all journals do so, and citation errors sometimes appear in the published version of articles. To minimize such errors, authors should therefore verify references against the original documents. Authors are responsible for checking that none of the references cite retracted articles except in the context of referring to the retraction. For articles published in journals indexed in MEDLINE, the ICMJE considers PubMed the authoritative source for information about retractions.

IV.A.9.b. Reference Style and Format

The Uniform Requirements style is based largely on an ANSI standard style adapted by the National Library of Medicine (NLM) for its databases. For samples of reference citation formats, authors should consult National Library of Medicine web site.

References should be numbered consecutively in the order in which they are first mentioned in the text. Identify references in text, tables, and legends by Arabic numerals in parentheses. References cited only in tables or figure legends should be numbered in accordance with the sequence established by the first identification in the text of the particular table or figure. The titles of journals should be abbreviated according to the style used in Index Medicus.

This Journal requires that the references from the Ayurvedic classics should be cited within parentheses in the text, i.e. (Cha. Soo. 25/40).

IV.A.10. Tables

Tables capture information concisely, and display it efficiently; they also provide information at any desired level of detail and precision. Including data in tables rather than text frequently makes it possible to reduce the length of the text.

Type or print each table with double spacing on a separate sheet of paper. Number tables consecutively in the order of their first citation in the text and supply a brief title for each. Do not use internal horizontal or vertical lines. Give each column a short or abbreviated heading. Authors should place explanatory matter in footnotes, not in the heading. Explain in footnotes all nonstandard abbreviations. For footnotes use the following symbols, in sequence:

***,†,‡,§,||,¶,**,††,‡‡**

Identify statistical measures of variations, such as standard deviation and standard error of the mean.

Be sure that each table is cited in the text.

If you use data from another published or unpublished source, obtain permission and acknowledge them fully.

Additional tables containing backup data too extensive to publish in print may be appropriate for publication in the electronic version of the journal. In that event an appropriate statement will be added to the text. Submit such tables for consideration with the paper so that they will be available to the peer reviewers.

IV.A.11. Illustrations (Figures)

Figures should be either professionally drawn and photographed, or submitted as photographic quality digital prints. In addition to requiring a version of the figures suitable for printing, this Journal asks authors for electronic files of figures in a format (e.g., JPEG or GIF) that will produce high quality images in the web version of the journal; authors should review the images of such files on a computer screen before submitting them, to be sure they meet their own quality standard.

For x-ray films, scans, and other diagnostic images, as well as pictures of pathology specimens

or photomicrographs, send sharp, glossy, black-and-white or color photographic prints, usually 127 x 173 mm (5 x 7 inches). Letters, numbers, and symbols on Figures should be clear and even throughout, and of sufficient size that when reduced for publication each item will still be legible. Figures should be made as self-explanatory as possible. Titles and detailed explanations belong in the legends, however, not on the illustrations themselves.

Photomicrographs should have internal scale markers. Symbols, arrows, or letters used in photomicrographs should contrast with the background.

If photographs of people are used, either the subjects must not be identifiable or their pictures must be accompanied by written permission to use the photograph. Whenever possible permission for publication should be obtained.

Figures should be numbered consecutively according to the order in which they have been first cited in the text. If a figure has been published, acknowledge the original source and submit written permission from the copyright holder to reproduce the material. Permission is required irrespective of authorship or publisher except for documents in the public domain.

IV.A.12. Legends for Illustrations (Figures)

Type or print out legends for illustrations using double spacing, starting on a separate page, with Arabic numerals corresponding to the illustrations. When symbols, arrows, numbers, or letters are used to identify parts of the illustrations, identify and explain each one clearly in the legend. Explain the internal scale and identify the method of staining in photomicrographs.

IV.A.13. Units of Measurement

Use only standard Units of Measurements. If some new measurements or scoring patterns are used they should be explained in detail in the text.

IV.A.14. Abbreviations and Symbols

Use only standard abbreviations; the use of non-standard abbreviations can be extremely confusing to readers. Avoid abbreviations in the title. The full term for which an abbreviation stands should precede its first use in the text unless it is a standard unit of measurement.

IV.B Sending the Manuscript to the Journal

This Journal accepts electronic submission of manuscripts, whether on disk or attachments to electronic mail. Electronic submission saves time as well as postage costs, and allows the manuscript to be handled in electronic form throughout the editorial process (for example, when it is sent out for review). When submitting a manuscript electronically, authors should consult with the instructions for authors of the journal they have chosen for their manuscript.

If a paper version of the manuscript is submitted, send the required number of 6 copies of the manuscript and figures; they are all needed for peer review and editing, and editorial office staff cannot be expected to make the required copies.

Manuscripts must be accompanied by a cover letter, which should include the following information.

- A full statement to the editor about all submissions and previous reports that might be regarded as redundant publication of the same or very similar work. Any such work should be referred to specifically, and referenced in the new paper. Copies of such material should be included with the submitted paper, to help the editor decide how to handle the matter.
- A statement of financial or other relationships that might lead to a conflict of interest, if that information is not included in the manuscript itself or in an authors' form
- A statement that the manuscript has been read and approved by all the authors, that the requirements for authorship as stated earlier in this document have been met, and that each author believes that the manuscript represents honest work, if that information is not provided in another form; and
- The name, address, and telephone number of the corresponding author, who is responsible for communicating with the other authors about revisions and final approval of the proofs, if that

information is not included on the manuscript itself.

The letter should give any additional information that may be helpful to the editor, such as the type or format of article in the particular journal that the manuscript represents. If the manuscript has been submitted previously to another journal, it is helpful to include the previous editor's and reviewers' comments with the submitted manuscript, along with the authors' responses to those comments. Editors encourage authors to submit these previous communications and doing so may expedite the review process.

Copies of any permission to reproduce published material, to use illustrations or report information about identifiable people, or to name people for their contributions must accompany the manuscript.

V. References

A. References Cited in this Document

1. Davidoff F for the CSE Task Force on Authorship. Who's the Author? Problems with Biomedical Authorship, and Some Possible Solutions. Science Editor. July-August 2000: Volume 23 - Number 4: 111-119.
2. Yank V, Rennie D. Disclosure of researcher contributions: a study of original research articles in The Lancet. Ann Intern Med. 1999 Apr 20;130(8):661-70.
3. Flanagin A, Fontanarosa PB, DeAngelis CD. Authorship for research groups. JAMA. 2002;288:3166-68.
4. Peer Review in Health Sciences. F Godlee, T Jefferson. London: BMJ Books, 1999.
5. World Medical Association Declaration of Helsinki: ethical principles for medical research involving human subjects. JAMA. 2000 Dec 20;284(23):3043-5.
6. Pitkin RM, Branagan MA, Burmeister LF. Accuracy of data in abstracts of published research articles. JAMA. 1999 Mar 24-31;281(12):1110-1.
7. Patrias K. National Library of Medicine recommended formats for bibliographic citation. Bethesda (MD): The Library; 1991.

B. Other Sources of Information Related to Biomedical Journals

World Association of Medical Editors (WAME) www.WAME.org <http://www.WAME.org>

Council of Science Editors (CSE) www.councilscienceeditors.org <http://www.councilscienceeditors.org>

European Association of Science Editors (EASE) www.ease.org.uk <http://www.ease.org.uk>

Cochrane Collaboration www.cochrane.org <http://www.cochrane.org>

The Mulford Library, Medical College of Ohio www.mco.edu/lib/instr/libinsta.html <http://www.mco.edu/lib/instr/libinsta.html>

"This is a reprint (*with minor alterations according to the need of this Journal*) of the ICMJE Uniform Requirements for Manuscripts Submitted to Biomedical Journals. The editors of this Journals prepared this altered version. The ICMJE has neither endorsed nor approved the contents of this reprint. The ICMJE periodically updates the Uniform Requirements, so this reprint prepared on 1.1.2007 may not accurately represent the current official version at www.ICMJE.org <http://www.ICMJE.org>. The official version of the Uniform Requirements for Manuscripts Submitted to Biomedical Journals is located at www.ICMJE.org <http://www.ICMJE.org>."

Annexure I

Manuscript no. JOA/NIA/20 /

Authorship Criteria and Responsibility
Financial Disclosure, Acknowledgment and Copyright Transfer Form

Manuscript Title :

I/We certify that the manuscript represents valid work and that neither this manuscript nor one with substantially similar content under my/our authorship has been published or is being considered for publication elsewhere. For papers with more than 1 author, We agree to allow the corresponding author to serve as the primary correspondent with the editorial office, to review the edited typescript and proof.

I/We have seen and approved the submitted manuscript. All of us have participated sufficiently in the work to take public responsibility for the contents. All the authors have made substantial contributions to the intellectual content of the paper and fulfil at least 1 condition for each of the 3 categories of contributions: i.e., Category 1 (conception and design, acquisition of data, analysis and interpretation of data), Category 2 (drafting of the manuscript, critical revision of the manuscript for important intellectual content) and Category 3 (final approval of the version to be published).

I/We also certify that all my/our affiliations with or financial involvement with any organization or entity with a financial interest in or financial conflict with the subject matter or materials discussed in the manuscript are completely disclosed on the title page of the manuscript. My/our right to examine, analyze, and publish the data is not infringed upon by any contractual agreement. I/We certify that all persons who have made substantial contributions to the work reported in this manuscript (e.g., data collection, writing or editing assistance) but who do not fulfil the authorship criteria are named along with their specific contributions in an acknowledgment section in the manuscript. If an acknowledgment section is not included, no other persons have made substantial contributions to this manuscript. I/We also certify that all persons named in the acknowledgment section have provided written permission to be named.

The author(s) undersigned hereby transfer(s), assign(s), or otherwise convey(s) all copyright ownership, including any and all rights incidental thereto, exclusively to the Journal of Ayurveda, in the event that such work is published in Journal of Ayurveda.

Authors' name(s) in order of appearance in the manuscript.

1. Name	Signatures	(date)
2. Name	Signatures	(date)
3. Name	Signatures	(date)
4. Name	Signatures	(date)
5. Name	Signatures	(date)
6. Name	Signatures	(date)

Annexure II

Manuscript Submission Checklist

Submitted by: E-mail ☐ Post ☐ Both ☐

Covering letter and submission :

1. Covering letter (in original) ☐
2. Copyright transfer form (in original) ☐
3. Illustrations (in original) ☐
4. Manuscript (E-mail/original) ☐
5. Category for which submitted ☐

Presentation and Format :

1. Printed on A4 paper with 1" margins on all sides in double space. ☐
2. Abstract, text, acknowledgement, references, legends, tables starting on a new page. ☐
3. Title page contains the following:
   - Full title of the paper ☐
   - Initials, surname and highest degree of authors, affiliation ☐
   - Name of Departments/Institution ☐
   - Details of Corresponding Authors including e-mail ☐
   - Numbers in Arabic numerals. ☐
4. Abstract (Hindi and English) and Key words provided. ☐
5. “What this study adds” Box (only for research papers and short communications). ☐
6. References. ☐
7. Pages numbered consecutively. ☐

Language and Grammar :

1. Uniform American English. ☐
2. Abbreviations spelt out in full for first time. ☐
3. Text arranged as per IMRAD format. ☐
4. Follows style of writing in Journal of Ayurveda. ☐
5. Conventional units used throughout manuscript. ☐

Tables and Figures :

1. No repetition of data in Table/graphs and in text. ☐
2. Figures are black and white (except Images), good quality; with labels on back. ☐
3. Table numbers in roman numerals and Figure numbers in Arabic numerals. ☐
4. Correct symbols used for footnotes to tables. ☐
5. Figure legends provided. ☐
6. Patient privacy maintained ☐

Short Communication

AYURVEDA NEWS AND VIEWS

Dr. Rizwana Parveen

National & Internal Seminars

- CME for Teachers in the Dept. of Dravyaguna, organized by G. J. Patel Institute of Ayurvedic Studies & Research, Gujarat.
  Date : 2nd to 7th January, 2017.
- International Conference on Yoga for Diabetes, organized by Central Council for Research in Yoga & Naturopathy, New Delhi.
  Date : 4th to 6th January, 2017.
- International Conclave on Ayurveda – VAJRA 2016, organized by Vaidyaratnam Group.
  Date : 13th to 15th January, 2017.
- Application for Participation in CME Program for Teachers on Rasashastra & BhaishajyaKalpana, organized by Ayurved Mahavidyalaya, Nashik.
  Date : 16th to 21st January, 2017.
- Continuing Medical Education (CME) Program For Teachers On Fundamental Research, organized by Regional Ayurveda Institute For Fundamental Research, Pune.
  Date : 16th to 21st January, 2017.
- CME Program for Teachers of the Department of Samhita and Siddhanta, organized by State Ayurvedic College and Hospital, Lucknow.
  Date : 9th to 14th January, 2017.
- National Seminar on Management of Renal Disorders, organized by Maha Ayurveda Research and Medical Association.
  Date : 22nd January, 2017.
- RUDHIRAM 2017 - National Seminar on a Better Life Towards Sickle Cell Disease in Ayurveda, organized by Parul Institute of Ayurveda, Gujarat. Date : 5th to 7th January, 2017.
- National Seminar on Clinical Aspects in Prasuti Tantra & Stri Roga, organized by Sanjivani Health Care. Date : 22nd January, 2017.
- Bhishak Sangama, organized by Shri Dharmasthala Manjunatheswara Institute of Ayurveda & Hospital, Bengaluru.
  Date : 20th January, 2017.
- National Seminar in Prasuthi Tantra & Stree Roga, organized by Dr. NRS Government Ayurvedic College, Vijayawada.
  Date : 19th to 21st January, 2017.
- International Symposium on Drafting of National Policy on Medicinal & Aromatic Plants of India, organized by Federation of Medicinal and Aromatic Plants Stakeholders.
  Date : 19th and 20th January, 2017.
- 3rd National Seminar and Workshop "Agnikarma - Ayurveda Pain Management", organized by Global Agnikarma Centre. Date:29th Jan., 2017.
- National Seminar on Hrudroga (IHD) Concept to Clinical Practices, organized by Rashtriya Shikshan Mandal's Centre for PostGraduate Studies and Research in Ayurveda, Pune and AIMS of India. Date : 29th January, 2017.
- 32nd National Conference 'Nimacon', organized by National Integrated Medical Association, Indore.
  Date : 28th and 29th January, 2017.
- Interactive Workshop On Ayurvedic Approach of Jwara and its Management, organized by Rashtriya Ayurveda Vidyapeeth, New Delhi.
  Date : 13th to 15th February, 2017.
- Sambhasha International Conference on "Scope And Role Of Ayurveda In The Management Of Madhumeha And Its Complications", organized by National Institute Of Ayurveda, Jaipur. Date : 5th to 7th February, 2017.
- National Seminar on Diagnosis, organized by Central University of Tibetan, Varanasi. Date : 10th to 12th February, 2017.

*Sr. Research Fellow-Journal of Ayurveda, NIA, Jaipur

- National Seminar on "Role of Ayush in Health Care Management in NE India", organized by North Eastern Institute of Ayurveda and Homeopathy, New Delhi.
  Date : 23rd and 24th February, 2017.
- International Conference on "Drug Delivery System of Phytoconstituents-Past,Present & Future", organized by Invertis Institute of Pharmacy. Date : 17th and 18th February, 2017.
- AHARA MANTHANA - 2017, organized by Sri Dharmasthala Manjunatheshwara College of Ayurveda, Udupi. Date : 24th February, 2017.
- National Workshop on Conservation and Cultivation of Medicinal Plants, organized by Tilak Ayurved Mahavidyalaya, Pune. Date : 10th February, 2017.
- Conclave on Translational Research Opportunity in Ayurveda And Iastam Oration Award Function, organized by Banaras Hindu University, Varanasi.
  Date : 18th and 19th February, 2017.
- Jignasa 2017-International Conference on Convergence of Health Traditions Bharatavarsha, organized by Vidyarthi Seva Trust. Date : 10th to 12th February, 2017.
- Excrescence 2017:National Seminar on Ayurvedic Oncology, organized by Sri Bharadwaj Foundation.
  Date : 4th and 5th February, 2017.
- Seminar on Ayurveda for Primary Health Care Needs in Rural India, organized by Vishwa Ayurveda Parishad, Tirupati. Date : 12th and 13th February, 2017.
- Workshop On Rational Structure Based Drug Discovery, organized by All India Institute of Medical Sciences, New Delhi.
  Date : 22nd to 24th February, 2017.
- National Symposium on Shotha and the Unified Theory of Inflammatory Diseases, organized by MBU, IMS, BHU-Varanasi, IMAB-Gorakhpur. Date : 7th February, 2017.
- Workshop on Clinical Bioinformatics, organized at Biomedical Informatics Centre, Kolkata.
  Date: 7th and 8th February, 2017.
- Charak Chintan - Practical Application of Charak, organized by National Ayurveda Students & Youth Association.
  Date : 24th to 26th February, 2017.
- International Conference on Convergence of Health Traditions in Bharatavarsha & Ayurveda Acharya Sangamam, organized by Vidyarthi Seva Trust.Date : 7th to 12th February, 2017.
- National Seminar on Samprapti Vidnyan, organized by Shree Saptshrungi Ayurved Mahavidyalaya, Nashik.
  Date : 14th to 16th February, 2017.
- 20th Conference - Panchanga Veda : Ayurveda, Yoga, Jyotisha, Vastu, Gandharva Music, organized by Association of Ayurvedic Professionals of North America, Inc.(AAPNA). Date : 10th to 12th March, 2017.
- National Seminar on "Life Style Disorders & Ayurveda", organized by Shubhdeep Ayurved Medical College & Hospital, Indore. Date : 4th and 5th March, 2017.
- Amrita Samyogam-2017: National Conference on "Integrative Ayurveda & Modern Medicine", organized by Amrita Centre for Advanced Research in Ayurveda.
  Date : 28th and 29th March, 2017.
- 23rd National Seminar on Evidence Based Ayurvedic Approach to Diagnosis, Prevention and Management of Diabetes and its Complications", organized by Rashtriya Ayurveda Vidyapeeth, New Delhi.
- AYUR KAUSHALYA 2017:A National Conference with Live Demonistration & Hands on Training Workshop, organized by Dr. G.D. Pol Foundation's YMT Ayurvedic Medical College, Hospital & P.G.Institute, Maharashtra. Date : 4th to 6th March, 2017.
- National Seminar on Standardization of Ayurvedic Drugs Need and Challenges, organized by Government Ayurved College, Nagpur.
  Date : 19th and 20th March, 2017.

- Exhibition on "Innovations in Medical Science and Biotechnology", organized by ICMR, DBT-BIRAC and NIF-India.

  Date : 4th to 10th March, 2017.

- Symposium on Developing Protocol for Management of Diabetes and its Complications, organized by All India Institute of Ayurveda, New Delhi. Date : 17th and 18th March, 2017.

- Sahyaayanam 3, organized by Ayurveda Medical Association of India, New Delhi.
  Date : 3rd to 5th March, 2017.

- Training Programme on "Practical demonstration of Samhita based clinical methods of examination", organized by Rashtriya Ayurveda Vidyapeeth, New Delhi. Date : 3rd and 4th March, 2017.

- Training Programme on "Practical demonstration of Samhita based clinical methods of examination", organized at Sri Dharmasthala Manjunatheshwara College of Ayurveda and Hospital, Udupi. Date : 10th and 11th March, 2017.

- National Seminar on Opportunities and Role of Ayurveda in Non-Communicable Diseases-Present Global Challenge, organized by Madan Mohan Malviya Government Ayurved College, Rahasthan. Date:24th and 25th March, 2017.

- National Workshop on Contemporary Importance of Agnikarm, organized by Dr S R Rajasthan Ayurved University, Jodhpur.
  Date : 6th and 7th March, 2017.

- International Yoga Fest & Yoga Workshops, organized by Morarji Desai National Institute of Yoga, New Delhi. Date : 10th March, 2017.

- National Seminar on Biotechnology in Health Care: Challenges and Opportunities, organized by Jamia Hamdard University, New Delhi. Date : 18th and 19th March, 2017.

- ERIPSCON 2017-"Recent Trends in Drug Discovery & Challenges in Drug Therapy", organized by Vijaya Institute of Pharmaceutical Sciences for Women, Vijayawada.
  Date : 24th and 25th March, 2017.

- National Symposium on Medicinal Plants and National Seminar on Yoga, organized at Panjim, Goa. Date : 25th to 27th March, 2017.

Oil Pulling Therapy – An ancient Ayurvedic technique for good oral health

Gargling with any oil for at least 20 minutes every morning on an empty stomach is known as 'oil pulling therapy', an ancient Ayurvedic technique that dates back to more than 3000 years. In Ayurveda, the oil pulling procedure is also referred to as 'Kavala' or 'Gandusha', and this has been used extensively during ancient days to treat all problems associated with oral cavity including tooth decay, throat dryness, bleeding gums, cracked lips, strengthening teeth, gums and jaw. Oil pulling is also used as an oral cavity cleanser, and prevents oral diseases. Though sesame oil and sunflower oil are also recommended for oil pulling therapy, it is coconut oil that has gained popularity, as it shows huge benefits in maintaining oral health. Coconut oil is the most popular of all pulling oils, as it expels toxins from the mouth, prevents gingivitis, dental caries and oral thrush.

This therapy, which originated in Ayurveda, 'pulls' bacteria and other debris from the mouth, and gives fresher breath, whiter teeth and healthier gums, and protects you from various chronic health problems.

Coconut oil is considered one of the best oils to maintain proper health, is a super food and an ayurvedic miracle. Being rich in saturated fat with numerous health benefits, coconut oil helps in preventing Alzheimer's, cardiovascular disease, reduces cholesterol, boosts skin health and burns fat.

Being highly absorbable, with less omega 6 fatty acids, and being more flavourful, coconut oil is highly recommended for good dental hygiene. Also, the presence of 'Lauric acid' in coconut oil makes it a very effective antibacterial and antiviral agent, while the presence of 'Caprylic acid' in coconut oil makes it a powerful antifungal agent.

Benefits of oil pulling therapy

Swishing oil in the mouth directly lessens the

bacterial load in the mouth, cleansing and expelling toxins and bacterial from the oral cavity and other microbes from the body.

The primary cause of tooth decay is the bacteria called 'Streptococcus mutans'. Lauric acid present in coconut oil, helps remove bacteria effectively, reducing tooth decay.

Coconut oil pulling therapy has an effect on plaque formation and plaque-induced gingivitis. Swishing oil in the mouth leads to film formation on the teeth, and this film on gingiva reduces plaque adhesion. The lauric acid present in coconut oil reacts with sodium hydroxide in saliva and forms sodium laureate, which is responsible for cleansing teeth and decreasing plaque.

Oil Pulling therapy has also been proven to be effective as a mouthwash in eliminating bad breath, and this study has been published in the Journal of Indian Society of Pedodontics and Preventive Dentistry.

Oil Pulling therapy helps in preventing gum disease, which is caused due to accumulation of bacteria on the tooth and gaps between teeth and gum. Oil pulling will get in between the teeth and deep within gums and remove bacteria and other microbes.

'Oral Thrush' is a common infection caused by yeast. Oil pulling therapy with coconut oil prevents this, due to the presence of 'caprylic acid', a natural antifungal that kills yeast present in the mouth.

What's more, coconut oil pulling can whiten teeth naturally by eliminating the biofilm left by germs on the teeth, thereby removing tooth stain, resulting in whiter teeth.

Oil Pulling Therapy Method

Basically oil pulling is the simple process of swishing or holding oil inside your mouth for a few minutes.

Take 1 to 2 tablespoons of coconut oil in your mouth and gently swish it. Move it fully inside the mouth and in between your teeth.

Pull through the teeth and ensure that oil mixes with the saliva for about ten to twenty minutes.

Repeat the process until the oil turns white in colour. Please take care that you do not swallow the oil, as it is full of toxins.

Spit the oil and rinse the oral cavity with regular water.

After oil pulling therapy, brush your teeth with your regular fluoride toothpaste.

Note:

Oil pulling should be done early in the morning on empty stomach only.

Take care not to swallow the oil when swishing. Make sure that you don't give up your routine dental care procedures while including oil pulling into your oral hygiene routine. Can try and experiment with sesame oil too.

With so much to offer, make sure you incorporate this simple oral health technique into your daily routine!

Sources of information

www.ayurvednews.com
www.ayurvista.net
www.ayurvedforum.com
www.ayurvedictalk.com
www.liveayurved.com
www.ians.in
www.naturalproductsasia.com
http://expressbuzz.com