

Role of *Chitraktriphala* *kashayam Churan* and lifestyle modification in *Madhumeha* w.s.r. to Diabetes Mellitus Type 2- A Case Study

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Abstract-

Background- Lifestyle disorders and Non-communicable diseases has imposed a major threat to mankind in the 21st century and Type 2 Diabetes Mellitus is one of the most common among them. *Madhumeha* is a disease in which *Mutra* (urine) of the patient attains similar property like those of *Madhu* (Honey). In present case study, *Chitrak Triphala Kashayam Churan* with Luke warm water was administered for 45 days to a diagnosed patient of *Madhumeha*. Strict dietary and lifestyle modification including regular physical activity were also suggested to the patient during this period. Patient was assessed on certain symptoms like *Prabhutmutrata*, *Trishnaadhikya*, *Kshudhaadhikya Mukhashosha Vibandha Hastapada* and *Sandhi Shoola Karapada Daha Karapada Supti, Daurbalya, Klama Swedadhikya* etc. as subjective parameters, before initiation and after the treatment (45 days) and FBS Score, PPBS Score, Urine Protein Score, Urine Sugar Score, as objective parameters. Symptoms related to *Madhumeha* relieved after treatment and also FBS- 168.6 - 103.80, PPBS Score - 222.35-175.3, Urine Protein- 0.80 – 0.13, Urine Sugar Score – 3+ to Nil sugar, decreased after treatment. *Chitrak Triphala Kashayam Churan* with Luke warm water accompanied by lifestyle modification are effective in the management of metabolic syndrome.

Keywords: Diabetes mellitus, Non-communicable Disease, hyperglycemia, End stage renal disease, *Madhumeha*.

INTRODUCTION

Diabetes mellitus is a metabolic disorder characterized by hyperglycemia either due to the lack of insulin secretion or insulin resistance or due to the combination of insulin resistance and inadequate insulin secretion.

Type-1 diabetes is due to the destruction of pancreatic islet beta cells, probably an autoimmune disease.

Type II DM is a heterogeneous group of disorders which is characterised by variable insulin resistance, impairment of insulin secretion and increased glucose production¹. Diabetes Mellitus usually presents with symptoms like polyuria, polydipsia and polyphagia. Other Specific Types:- Genetic defects in β -cell function characterized by mutation in-MODY-II [Glucokinase] etc. Genetic defects in insulin action- like insulin resistance etc. Endocrinopathies:-Acromegaly, Cushing's syndrome, pheochromocytoma (A hormone secreting tumor in adrenal gland) etc. Pancreatic diseases- Such as Pancreatitis, Pancreatectomy, cystic fibrosis etc.

Drug & Chemical induced- Nicotinic acid, Glucocorticoids, thiazides etc. Infections- Congenital Rubella, cytomegalovirus etc. Excess endogenous production of hormones antagonist to insulin [anti-insulin receptor antibodies. Associated with genetic syndromes like as Down syndrome, Klinefelter syndrome. Gestational Diabetes mellitus(GDM).

Patients with type-2 diabetes often have an insidious onset of hyperglycemia and remain asymptomatic for a longer period. They come to know about diabetes either when they develop any complication or accidentally when they visit doctor for some other problem. Diabetes is the leading cause of blindness, neuropathy, end-stage renal disease, and foot ulcers, can cause adverse cardiac events and stroke. In 2019, 9.3% of the world's population, adults aged 20-79 years are living with Diabetes. India has 8.9% of its population, aged 20-79 years with Diabetes in 2019.

In Ayurveda, *Madhumeha* is mentioned as one of the twenty type of *Prameha* described in *Ayurvedic* samhitas. In *Madhumeha* the urine which patient passes is of sweet, astringent in taste, whitish pale in colour & unctuous in character. (Ch.Ni.4/44). According to Charaka person suffering from *Madhumeha* passes urine which is *Kashaya*, *Madhura*, *Pandu Varna* and *Ruksha*. According to *Acharya Vagbhata*, *Madhumeha* has two types of pathophysiology

- *Dhatu-kshayajanya*
- *Avaranajanya*

Prameha is a *Tridoṣhaja* condition with dominance of *Kapha*. It is a disease primarily related to *Mutravaha* and *Medovaha Srotasa* which can also have other *Srotas* involvement thereby making it as a multisystem disorder as it involves ten *Dushyas* and *Tridoshas*. *Prameha* is a condition in which patient passes excess and turbid urine² (*Avilbahumutrata*). *Acharya Charaka* has used term "*Bahudrava Shleshma* and *Avabadha Meda*" in the description of *Prameha* and *Dushyas* involved in it are mainly *Avabadha Meda*, *Mamsa*, *Kleda*, *Shukra*, *Shonita*, *Vasa*, *Majja* etc. are all *Kapha Vargiya*³. According to *Madhavidana*, the prodromal features of *Prameha* are excess *Mala* on tooth, palate and tongue, burning sensation of hands and feet, oiliness in the body, excess thirst, sweet sensation in mouth⁴, while *Sushruta Samhita* has mentioned some additional features like sweetness in urine, foul breathe. *Acharya Charaka* has mentioned gathering of ants towards the site of urination as one of the prodromal features of *Prameha*⁵. *Madhumeha* may be caused by *Ati Matra Sevan* of *Guru*, *Snigdha Amla*, *Lavana Ahara*, *Navanna Pana*, day sleeping (*Divasvapna*), sedentary life (*Asyasukha*), *Swapansukha*, *Vyayama Tyaga*, *Achinta*, not performing *Sanshodhana Karma*, excessive intake of curd

(*Dadhi sevan*), *Gramya Ahar*, *Audak* and *Anupa Mamsarasa*, milk and milk products, jaggery (*Guda*) and all kinds of *Kapha* aggravating factors. Due to above mentioned *Nidana*, *Shleshma*, *Pitta*, *Meda Mansa* increase. These obstruct passage of *Vayu* which takes *Oja dhatu* in *Mutrashaya* and cause *Madhumeha*. In beginning symptoms of increased *Vata*, *Pitta* and *Kapha* are seen. Gradually symptoms related to *Kshaya* appear in patient. (Ch.Su.17/78-81)

Madhumeha also named as *Ojomeha* is one of the types of *Vataj Prameha*. *Ojah* which is *Madhura* in taste with *Ruksha* and *Kashaya Guna* of *Vayu* goes in to *Mutrashaya* and causes *Madhumeha*. (Ch.Ni.6/37) *Acharya Sushruta* has mentioned that *Madhumeha* is the consequence of untreated *Prameha*⁶, a condition in which patient passes urine resembling honey in appearance.⁷ *Madhumeha* is considered as *Asadhya Vyadhi*. (Su.Ni.6/12) *Madhumeha* present with birth (*Beejdoshat*) and by hereditary (*Kulaja Vikara*) is *Asadhya* according to *Charaka*. (Ch.chi6/57)

Currently, a number of antidiabetic agents such as oral hypoglycemic agents and various insulin preparations are available for the management of diabetes, but their long-term applications cause various adverse effects. In the present case, *Chitrak Triphladi Kashayam Churan* mentioned in *Ashtang hridayam*, with luke warm water has been selected for the management of *Madhumeha* (type-2 diabetes mellitus) due to its *Pramehara* properties acting on etiopathogenesis of *Madhumeha*.

CASE REPORT:

A sixty years old obese male patient visited OPD with chief complaints of weakness, excess urination at night, numbness in legs and feet. Patient was recently retired from a government job (desk work- 6-8 hours). He was strictly vegetarian, had good appetite, fond of milk products and sweets. Patient used to take 4-5 cups of tea a day, no other addiction. He enjoyed sound sleep and slept for 9 hours in night and 1 hour in daytime, no exercise or irregular walk. He had not undergone any major surgery. His random blood sugar was tested in dispensary and found to be 223 gm/ dl and blood pressure was 160/100 mm of Hg at that time. Till then he was not taking any medicines. His past history of illness and his lifestyle was inquired about. Patient came to OPD to take Ayurvedic treatment for excess urination at night.

Past History: 2 months back, patient was well, gradually he started feeling weakness, lethargy, dryness of throat, loosening of cloths in 2-3 months, dryness of mouth, frequency of urination increased at night with excessive sweating, constipation, excess thirst, lethargy. One year before he got covid- 19 infection and was hospitalized for 14 days due to high grade fever and chest infection. He was on wysolone (40 mg). with other medicines, that was gradually tapered down. There was no past history of prolonged illness. He had sedentary lifestyle, not doing any regular walk /exercise/ yoga for past several years. Patient used to take heavy meals in breakfast, fond of sweets and milk products.

Family history-Patient's father, mother and elder brother were also diabetic, hypertensive and obese, father had undergone coronary bypass surgery, died due to cardiac failure 10 years back.

Patient's Examinations: Body weight - 93 Kg., Height - 169 cm., BMI - 32.6 kg/m², Waist Height Ratio- 0.52, Waist Hip Ratio- 37.0, Pelvis - 44 cm., Mid-Thigh- 22, blood pressure - 160/ 100 mm Hg, pulse rate- 100/min., Respiratory Rate- 18/ min., /Pallor-absent, Icterus, Cyanosis, Clubbing- Absent, Tongue- coated. CNS - Conscious, oriented to place, person and time. C.V.S. - S1, S2 Normal, R.S.- No added sounds, Clear chest.

Ashtavidha Pariksha: *Nadi* - *Kapha Pradhana*, *Manda Vega*, *Mutra* (Urine frequency) -4-5 times /day, 2-3 times during night, *Mala* (Bowel habits)- *Krurakoshtha*, *Nirama Mala* (constipated), *Jivha* (Tongue) - *Sama* (Coated), *Shabda* (speech) - *Aspashta*, *Sparsha* (Touch)- *Ushna* (Warm), *Drika* (Eyes)- Normal, *Akriti* (Built) - *Sthula* (Obese), *Prakriti* - *Kapha Pradhana Pitta Prakriti*, *Samhanana*- *Madhyama*, *Satmya*- *Madhyam Satva* -*Madhyam*, *Abhyaharana Shakti* - *Madhyama*, *Jarana Shakti*- *Avara*, *Vyayamashakti* - *Avara* (poor).

Laboratory investigations: showed FBS- 168.6 - 103.80, PPBS Score - 222.35-175.3, Urine Protein- 0.80 - 0.13, Urine Sugar Score - 3+ to Nil sugar, Grade II fatty liver was noticed in abdominal ultrasonography. His echocardiography was reported normal with LVEF > 60%. Criteria for assessment: Patient was assessed on the basis of relief in symptoms like *Prabhutmrata* (Polyuria), *Trishnaadhikya* (Polydypsia), *Kshudhaadhikya* (Polyphagia), *Mukhashosha* (Dryness of mouth), *Vibandha* (Constipation), *Hastapada* and *Sandhi Shoola* (Pain in hands, feet and joints), *Karapada Daha* (Burning sensation in hands & feet), *Karapada Supti* (Numbness in hands and feet), *Daurbalya* (Weakness), *Klama* (Early Fatigue), *Swedadhikya* (Excessive sweating) and investigations like FBS Score, PPBS Score, Urine Protein Score, Urine Sugar Score, regular monitoring of blood pressure, before and after the treatment, almost 45 days. The patient was diagnosed as a case of *Medoroga* with *Madhumeha* and *Vyanavayu Vaishamyam* (Metabolic Syndrome).

a) Treatment Protocol: Patient was given *Chitraktriphaladi Kashayam Churan* 3 gm. twice a day with luke warm water for 45 days. He had also been advised about the dietary modification like stopping intake of saturated fats, refined carbohydrate, sweetened beverages, over intake of food, day time sleep, sedentary lifestyle and suggested to take of low-fat dairy items like toned milk, avoidance of salted and processed food items, increase intake of green leafy vegetables and fruits and rich fibre diet, more intake of barley, performing regular 30 minutes of exercises and about 03-05 Km. of brisk walk (at least 05 days/week).

b) Follow up and Outcome: Patient's symptoms were assessed on every 15 days interval during the treatment. Highly Significant improvement was noticed in overall symptoms like *Prabhutmrata*, *Trishnaadhikya*, *Kshudhaadhikya*, *Mukhashosha*, *Vibandha*, *Hastapada* and *Sandhi Shoola*, *Karapada Daha*, *Karapada Supti*, *Daurbalya*, *Klama*, *Swedadhikya* and in laboratory investigations like FBS Score, PPBS Score, Urine Protein Score, Urine Sugar Score were found. Regular monitoring of blood pressure was done, that also showed significant decrease.

DISCUSSION

The main causes of type 2 Diabetes Mellitus are sedentary lifestyle, unhealthy eating practices, stress, alcohol, cigarette smoking and genetics. Symptoms in *Madhumeha* do not appear in one day, these are due to long duration of bad lifestyle habits, that cause some pathological events to occur in the body, which can be correlated with modern as follows :-

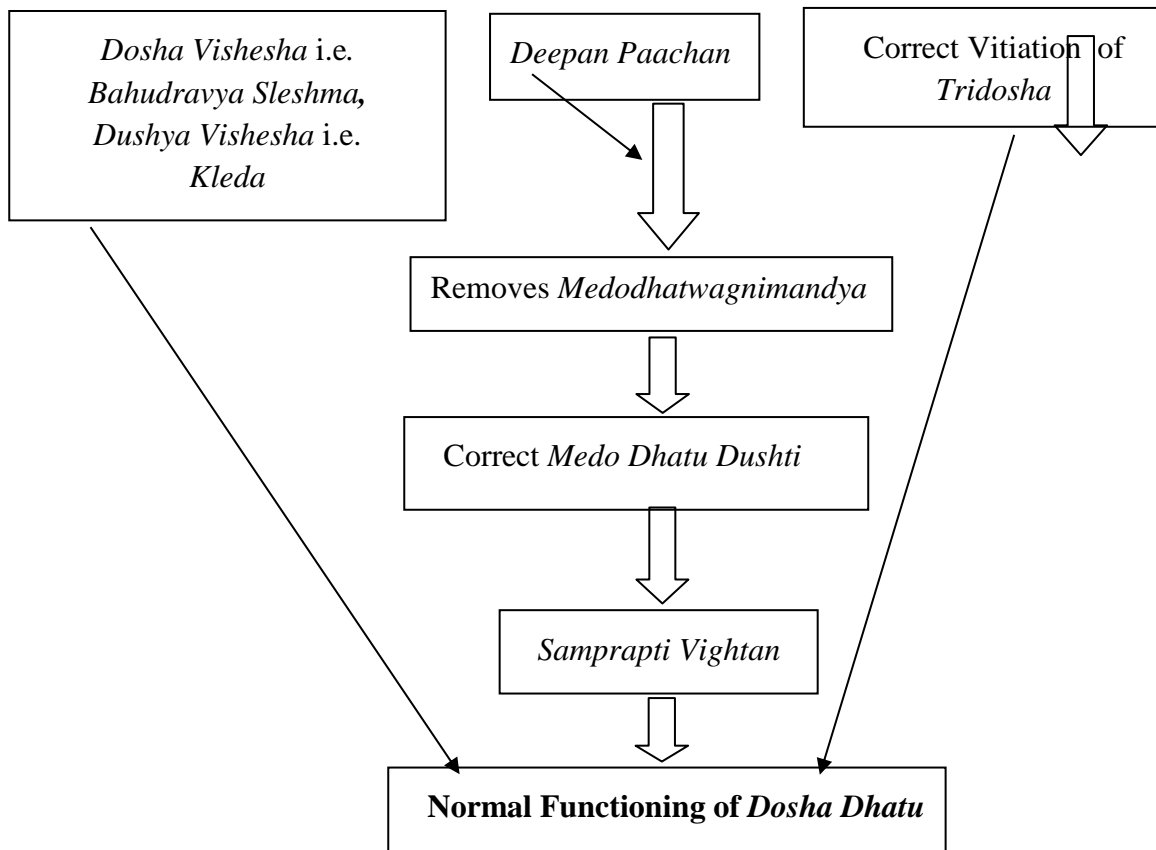
Kleda In Prameh: *Kleda* being one of the main symptom in *Madhumeha* can be correlated with the hyperosmolar hyperglycemic state in diabetes mellitus. Liquified *Kapha* increases in quantity. (*Bahu Drava Sleshma*)⁸. *Kapha* causes *Shaithilya* or *Shithilikarana*, followed by the association of *Kapha* with excess and unbound/unutilized (*Bahu Abadda Meda, Mamsa, and Kleda*), resulting in a variety of symptoms. Excessive consumption of *Madhura Ras* and similar compounds causes a rise in the quantity of *Sleshma* and *Kleda*, which is a liquid state of *Kapha* that travels throughout the body with *Rasa* (circulation), assisting *Dhatu Tarpana* (Anabolism) and collecting *Dhatu Mala* (Catabolism). It eventually combines with urine and is excreted from the body. As per modern view also when the level of glucose rises beyond the normal range the glucose which is a nutrient for cell and is present in extra cellular fluid (ECF) of the body rises which in turns brings the extra cellular fluid in hyperosmolar hyperglycaemic state (HHS). This hypersmolar hyperglycemic state drags water from the cell to extra cells fluid thus the body cell making less functional. All these can lead to following features and symptoms: - **Hasta Pad Supti, Hasta Pad Dah, Kara Pad Supti:**- This HHS can effect neurons causing neuropathy, **Timir:** - Fluid retention around retinal cells and lens of eyes causing blurring of vision. **Prameh Pidika:**- due to lack of WBC, that are less effective against infections thus lowering immunity. **Klama and Pindika Udvestan-** RBC are less efficient to carry oxygen which will drop down oxygen supply to active muscle cells, Cause nephropathy. **Prakarshen, Prabhutnutrata:**- More glucose in urinary tubules will drag more water along with it and cause polyurea. **Trishnaadhikya, Mukhsosha:**-When due to poly urea water of the body gets depleted it causes polydipsia. Depletion of glucose from the body via urine leads to polyphagia. **Svedadhikya** :-When long standing HHS state effects nervous system then the autonomic nervous system is also affected. **Hritdrav** :-Derangement of autonomic nervous system also causes orthostatic hypotension and tachycardia. **Vibandh:**-When vagus nerve supply is effected, which is one of the main innervation for abdominal organs and heart, results in decreased peristaltic movements leading to chronic constipation. **Daurbalya:**- Presence of *Aama* and *Kleda* in the body leads to *Daurbalya*. It mainly happens because of less oxygen supply to muscles of the body which have a high demand of oxygen and glucose to carry out active moments of the body, so the muscles are rendered fatigued and eventually loss of muscle mass which eventually causes decreased in *Samhanan*. **Shithilangata:**- *Shithiangata* is also due to chronic state of disregulated glucose homeostasis of the body there is loss of muscle mass and overall, type II diabetes mellitus alters tendon mechanical properties and the dynamic response to load⁹. **Tandra, Alasya:**- when body is in chronic state of fatigue and in want of recovery and nutrition *Tandra* and *Alasya* can be observed as *Puravroop of Madhumeha*. **Swedo-anga gandhta:**- Along with the derangement of glucose metabolism there is also derangement of lipid metabolism in the body due to which the free fatty are released into blood which are uptake by liver and converted into ketone which is ultimately excreted mainly through urine and also with sweat, which gives a peculiar smell to body and causes *Swedo-Anga-Gandhata*. It can also be an indicator of DKA (Diabetic ketoacidosis) which is a serious complication of diabetes mellitus, if left untreated can lead to *Oja Kshya* and death of patient. Also described as *Arishta Lakashan* in *Pushpitakam Indriya Adhyaya* of *Charaka Samhita*.¹⁰

Ingredients of Chitraka Triphaladi Kashayam Churan¹¹:

Chitraka Triphaladi Kashayam Choorna is one of the *shamana yoga* (palliative) medicine used in treating diabetes.

S. No.	Name of the drug	Latin Name	Parts Used	Quantity
1.	<i>Chitraka</i>	<i>Plumbago zeylanica</i> Linn.	Root	1 part
2.	<i>Amalaki</i>	<i>Emblica officianalis</i> Gaertn.	Fruit	1 part
3.	<i>Haritaki</i>	<i>Terminalia chebula</i> Retz.	Fruit	1 part
4.	<i>Bibhitaki</i>	<i>Terminalia bellirica</i> Roxb.	Fruit	1 part
5.	<i>Daruharidra</i>	<i>Berberis aristata</i> Dc.	Bark	1 part
6.	<i>Kalinga (Kutaja beej)</i>	<i>Holarrhena antidysentrica</i> Linn.	Seed	1 part

PROBABLE MECHANISM OF ACTION OF DRUGS



PROBABLE MODE OF ACTION OF DRUGS:

In the treatment of *Madhumeha*, *Pathya*, lifestyle modifications and the drug *Chitrak triphaladikashayam Churan* plays important role in breaking the pathogenesis of the disease. Classical Ayurveda texts have both plant based and herbo-mineral drugs which can be prescribed to break *Samprapti* of diseases including *Madhumeha*. Although *Madhumeha* is considered as a *Vat Pradhana Tridoshaja Vyadhi*, but still emphasis is mainly on correction of vitiated *Kapha Dosha*, *Medovridhi* and *Medodhatwagnimandhya*. Also for the disintegration of *Samprapti* drug has to work at the level of *Jatharagni*, *Dhatwagni* and *Bhutagni*. The trial drug *Chitrak Triphladi Kasayam* with luke warm water have *Pramehara* properties acting on etiopathogenesis of *Madhumeha*. Drug characteristics such as *Tikta-Katu-Kashaya Rasa*, *Laghu-Ruksha Guna*, *Ushna Virya*, *Katu Vipaka*, and *Deepan Pachan* may also have rectified *Kapha Dushti* and eliminated *Medodhatwagnimandya*. They also act on *Dosha Visheshha* i.e. *Bahudravya Sleshma*, *Dushya Visheshha* i.e. *Kleda*. Drugs which have *Tikta Rasa* like *Kutaj* and *Daruharidra*, *Amla* and *Shita Virya Dravya* like *Amlaki* and *Kutaj* helps to pacify *Pitta*. Correcting the vitiation of *Kapha* and *Pitta* helps in removal and cleansing of obstruction of channels of *Vata*. *Tridosha Shamaka* drugs also helps in alleviating and pacifying *Vata Dusti* which causes normal functioning of *Dosha*, *Dhatu* and *Malas* which further relieves the symptoms of *Madhumeha*.

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