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## Effect of *Bhunimbadi Churna* in management of Uncontrolled Type 2 Diabetes Mellitus - A Case Study

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### ABSTRACT

**Background:** A global epidemic with serious public health repercussions is diabetes mellitus (DM). A well-known, multifactorial metabolic disorder known as hyperglycemia is characterized by exceptionally high blood glucose levels brought on by an absolute or relative insulin deficiency. Ninety percent of all diabetics have type-2 diabetes, which is the most prevalent kind of the disease. The disease DM is mentioned in classical *Ayurvedic* texts as *Madhumeha*. The *Prabhoota Mutrata* (Polyuria) is a cardinal symptom of disease. **Presentation of the case:** A 58-year-old Indian man with burning sensation in both eyes along with increased frequency of micturation was presented to O.P.D. of Kayachikitsa, based on a high HbA1c and fasting blood sugar, as well as polyuria, the Patient was diagnosed with uncontrolled diabetes mellitus. The patient was advised an *Ayurvedic* oral medication, dietary modification, and *Yoga*. After a month of *Ayurvedic* treatment, the Patient was able to get rid of his symptoms along with reduced HbA1C and Blood glucose levels. **Conclusion:** Diseases that pose a threat to one's life can be treated holistically, safely, and effectively with ayurveda. Diet and yoga advice acts as part of the diabetes therapy strategy.

**Key words:** Case report, Type 2 Diabetes Mellitus, Polyuria, Ayurveda, Uncontrolled Diabetes.

### INTRODUCTION

Diabetes, along with respiratory illness, cancer, and cardiovascular disease (CVD), is one of the biggest worldwide health concerns of the twenty-first century.<sup>[1]</sup> Nearly 592 million people are expected to die from diabetes by the year 2035.<sup>[2]</sup> Previously thought to be a disease of the wealthy "Western" nations, type 2 diabetes, which accounts for 90% of all cases of diabetes, has expanded internationally and is now a leading cause of disability and mortality for

increasingly younger age groups. Diabetes has become a pandemic in several emerging nations, including China and India.<sup>[3]</sup>

Diabetes is a chronic metabolic disease characterized by hyperglycemia (or blood sugar) levels that harm the heart, blood vessels, eyes, kidneys, and nerves.<sup>[4]</sup> Diabetes has been considerably more prevalent in recent years due to sedentary lifestyles and poor dietary habits, both of which are key etiological factors for the condition.<sup>[5]</sup>

Excess body weight, bad eating habits, and a sedentary lifestyle are all factors in this kind of diabetes.<sup>[6]</sup> The most common signs of this condition are polyuria (frequent urination), polydipsia (increased thirst), and polyphagia (increased appetite).<sup>[7]</sup> As a result, the illness may go untreated for years and only manifest clinically after problems have arisen.

Ayurvedic classical texts indicated 20 categories of *Prameha* depending on urine properties, volume, and dhatu discharged by urine.<sup>[8]</sup> Only *Madumeha*<sup>[8]</sup>/*Ojameha*<sup>[9]</sup>/*Kshaudrameha*<sup>[10]</sup> bear a close similarity to Diabetes mellitus, a *Vataja* sub-type

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of the disease. Because of *Virudhopkramatvat* (distinct/opposite management), this form of *Prameha* is termed *Asadhya* (incurable).<sup>[11]</sup> *Madhumeha* is caused by *Dhatvagnimandya* (weak digestive fire), and diabetes mellitus is also a metabolic condition, hence the two are related. *Dhatvagnimandya* (weak digestive fire) is a vital aspect of the *Samprapti* (pathogenesis), and as *Agni* (digestive fire) is disrupted owing to different circumstances that disrupt the *Tridosha* (three regulatory functional factors of the body) equilibrium. As a result, ingested food is turned to *Ama* (bio-toxin), and the *Dhatuposhana* (nourishment of *Dhatu*) and *Dhatu-Utpatti* processes are impeded.

The importance of "Ayurveda" in preventing and managing this chronic life-threatening illness is now well acknowledged worldwide. Simple lifestyle modifications, along with *Yoga* and *Ayurvedic* therapies, can help prevent and manage type 2 diabetes. In the current case study, the patient was prescribed the *Ayurvedic* medications listed below.

*Bhunimbadi Churna* 6 gm BD, along with dietary modification and *Yoga* advice for diabetes management. The present study aims to explore our experience of diabetes management through *Ayurveda*.

### Timeline

#### Timeline of the events.

##### 2021-11-18

The patient came complaining of burning sensation in both eyes along with increased frequency of micturation with raised level of blood glucose level and HbA1C level. Urine examination also showed glucose. Liver function test showed elevated level of SGPT along with normal value of other parameters. The patient was advised to take *Ayurveda* medication, dietary and lifestyle modification, and *yoga* for diabetes management.

##### 2021-12-07

The report showed high blood sugar levels but the value decreased in respect to previous report.

2022-01-24

The patient told Improvement in symptom of polyuria and burning sensation along with blood investigation showed marked improvement in Fasting blood glucose level.

##### 2022-02-22

Fasting blood sugar was decreased and urine examination showed decreased secretion of urine glucose. Marked improvement in HbA1c and fasting blood sugar. The patient was advised to continue the medication along with dietary and lifestyle modification.

### Narrative

A 58-year-old man came to O.P.D. with increased appetite, burning sensation in B/L eyes, weight loss and polyuria. According to the patient he was asymptomatic 2 months ago gradually he noticed there is blackishness over his face and he started losing weight. Along with that there is increased frequency of micturition. So, he consulted to the nearby physician and gets investigated. In the investigations his blood sugar level is raised. Now he came in O.P.D. for the further management. The patient's detailed medical history revealed that he was also suffering from nocturnal polyuria and the timeline of the events was described in detail in Table 1.

**Past H/o:** He had No history of diabetes/bronchial asthma/Tuberculosis and hypertension.

**Family H/o:** No family history of diabetes / hypertension / Bronchial asthma / Tuberculosis

**Addiction H/o:** He had no addiction history of smoking, tobacco and alcohol.

### Diagnostic Criteria

Diagnosis will be made based on symptoms and laboratory investigation along with clinical findings.

#### *Madhumeha Lakshana*

- *Prabhuta Mutrata* (Polyuria)
- *Avila-Mutrata* (unclear urine)
- *Kshudhaadhikya* (polyphagia)
- *Pipasaadhikya - Gala Talushosha* (polydipsia)

- *Daurbalya / Shrama* (exhaustion/tiredness)
- *Suptaangta / Daaha* (Polyneuritis- numbness, tingling, burning soles)
- *Pindikodveshtan* (Cramps while walking/calf muscle pain)
- *Vibandha* (Constipation)
- *Alasya* (Lethargy)
- *Sheet Priyata* (desire for cold food and environment)
- *Sweda* (excessive perspiration)
- *Mutra Abhidhavanti Pippilikasha* (Ants observed in urinated area)
- *Madhuramasyata* (feeling sweetness in mouth)

### Clinical Finding

**General Examination and Personal history:** General Condition of the patient was good. No deviation in vital signs. He is Hindu of Indian ethnicity. He had a moderate appetite, Normal bladder, constipated bowel habit and regular sleep pattern. He had a sedentary life style, well-built and well nourished. He had BMI 25.8 and weight 66kg. His *Prakriti* was *Vata Pittaja* Dominant. He had *Madhyama Satva*.

### Diagnostics

**Table 2: Laboratory investigations in different phases of treatment.**

Date	Type	Value	Unit
2021-11-17	Hb	17	g/dl
2021-11-17	Platelet Count	241000	/mm <sup>3</sup>
2021-11-17	Blood Glucose Fasting	190	mg/dl
2021-11-17	Blood Glucose Post Prandial	294	mg/dl
2021-11-17	S.G.O.T.	53	U/L
2021-11-17	S.G.P.T.	26	U/L
2021-11-17	Serum Creatinine	1.29	mg/dl

2021-11-17	Blood Urea	22.50	mg/dl
2021-11-17	Alkaline Phosphatase	84	U/L
2021-11-17	Total Protein	8.39	g/dl
2021-11-17	BMI (body mass index)	25.8	kg/square meter
2021-11-17	HbA1C	12.2	%
2021-12-05	Blood Glucose fasting	158	mg/dL
2021-12-05	Blood Glucose post prandial	220	mg/dL
2022-01-24	Blood Glucose fasting	202	mg/dL
2022-01-24	Blood Glucose post prandial	372	mg/dL
2022-02-21	Blood Glucose fasting	142	mg/dL
2022-02-21	Blood Glucose post prandial	301	mg/dL
2022-02-21	BMI (body mass index)	24.5	kg/square meter
2022-02-21	HbA1C	7.7	%

### Therapeutic Intervention

The patient was given for *Bhunimbadi Churna* 6gm BD (Table 02). The above said treatment was given for three month. The patient obtained great alleviation from the aforesaid treatment at follow-up.

**Table 3: Ingredients of the formulation.**

SN	Formulation	Ingredients
1.	<b><i>Bhunimbadi Churna</i></b>	<i>Bhunimba</i> ( <i>Andrographis paniculata</i> ) <i>Nimba</i> ( <i>Azadirachta indica</i> ) <i>Triphala</i> ( <i>Terminalia chebula</i> , <i>Terminalia bellirica</i> , <i>Embllica officinalis</i> ) <i>Padmak</i> ( <i>Prunus cerasoides</i> ) <i>Ativisha</i> ( <i>Aconitum heterophyllum</i> ) <i>Pippali</i> ( <i>Piper longum</i> ) <i>Murva</i> ( <i>Marsdenia tenacissima</i> )

	<i>Patola (Trichosanthes Dioica)</i> <i>Nisha (Curcuma longa)</i> <i>Patha (Cissampelos pareira)</i> <i>Kutki (Picorrhiza kurroa)</i> <i>Indravaruni (Citrullus colocynthis)</i> <i>Kalinga (Holarrhena antidysenterica)</i> <i>Vacha (Acorus calamus)</i> <i>Dantimula (Baliospermum montanum)</i> <i>Trivrita (Operculina turpethum)</i> <i>Brahmi (Bacopa monnieri)</i>
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**Result:** As indicated in table 03, the treatment was effective from the patient's sign and symptoms as well as in terms of biochemical indicators. Fasting blood glucose level and HbA1C both improved as a result of the treatment.

**Table 4: Overall effect of treatment on blood glucose level.**

Parameter	Before treatment	30 <sup>th</sup> day	60 <sup>th</sup> day	90 <sup>th</sup> day
FBS	190 mg/dl	153 mg/dl	202 mg/dl	142 mg/dl
PP-BS	294 mg/dl	283 mg/dl	372 mg/dl	301 mg/dl
HbA1C	12.2%	-	-	7.7%

#### Dietary and lifestyle modification

According to *Sushruta*, avoiding the etiological factor (*Nidana Parivarjana*) is one of the preventative and therapy approaches for all diseases. The patient was advised a detailed diet plan for week which he was followed (Supplementary file 1). After a thorough consultation, *Yoga* and *Pranayam* were prescribed. Restricting one's diet and changing one's lifestyle are all suggested. At follow-up, the patient reported significant relief from the aforementioned symptoms.

#### DISCUSSION

The type of *Madhumeha Samprapti* mentioned in the old *Ayurvedic* texts include *Vishishta Anilatmaka*,

*Dhatukshayajanya*, *Kala Prabhavaja*, and *Avarana Janya Madhumeha*.<sup>[12]</sup> Because of its distinctive / opposite administration, or *Virudhopkramatvat*, this kind of *Prameha* is regarded as *Asadhya*. Since *Agni* (digestive power) is disturbed by a variety of things that throw off the equilibrium of the *Tridosha*, *Dhatvagnimandya* is a fundamental part of the *Samprapti*. As a result, eating causes the production of *Ama* (bio-toxin), which interferes with *Dhatuposhana* and *Dhatu-Utpatti*. In *Prameha*, *Medodhatvagnimandya* is especially observed. Similar to *Dhatu Kshaya* in *Ayurveda*, diabetes mellitus (*Madhumeha*) also results in degenerative changes in the body, particularly in the pancreatic islets.

Further, it is important to mention the similarities between Diabetes mellitus and *Madhumeha*. *Nidana* of *Madhumeha* like *Madhura*, *Guru*, *Snigdha*, *Amla*, *Lavana Bhojana*, *Nidra- Aasyasukha*, *Avyayam*<sup>[13]</sup> etc., can be correlated with sedentary life style, the main cause of Diabetes mellitus. Also, genetic factors mentioned as the cause of Diabetes mellitus can be correlated with the *Bijadosha* and *Kulaja Dosh* mentioned in *Ayurveda*. *Prabhoota-Avila Mutra*, the *Pratytm Linga* of *Prameha* can be correlated with polyuria and turbidity of urine found in Diabetes mellitus.

As a result, the goal of the therapy should be to get *Agni* back. Drugs should have *Kaphamedohara* and *Vata Hara* characteristics as well as *Rasayana* and *Balya* effects because all *Dhatu*s are involved in *Ojakshaya*. One of *Chikitsa's* quadrupeds, a medication, is essential for the treatment of the illness. *Ayurvedic* practises suggest that *Prameha* can be safely treated with herbal medicines. The *medications Bhunimbadi Churna* from *Astang Hridaya Kushta Chikitsa Sthana* were taken from the traditional book.

The Indian plant *Andrographis paniculata* has been used for a variety of things, but is most famous for avoiding diabetes mellitus (DM).<sup>[14]</sup> Diabetes and other conditions like inflammatory, cognitive, and mental diseases are frequently treated with *A. paniculata* extracts.<sup>[15]</sup> Animal study on the herb revealed that in type 1 Diabetes mellitus rats, ethanol extracts of this



plant can lower blood glucose levels.<sup>[16]</sup> *Azadirachta indica*, a component of *Nimbadi Kashyam*, may aid in the management of type 2 Diabetes mellitus by increasing the production of GLUT4 protein and insulin signaling molecules, which enhances skeletal muscle oxidation.<sup>[17]</sup> It has been shown that the active compounds nimbinin and nimbandiol have a potent blood sugar-regulating action.<sup>[18]</sup>

The trial drugs have *Katu*, *Tikta* and *Kashaya Rasa* which pacify the *Kapha Dosha* and *Kleda* in the body, thus help in alleviating this symptom. *Katu Rasa* is *Shoshaka*, *Sneha-Sweda-Kledahara*, & *Kapha Shamaka*, *Tikta Rasa* is *Kleda-Meda-Vasa-Majja-Puya-Mutra-Purish-Pitta-Shlasamashoshak* and *Kashaya Rasa* is *Sangrahi*, *Stambhana*, *Sleshama-Rakta-Pitta Prasaman* and *Sharer Kleda Shoshaka*.<sup>[19]</sup> Thus, all these properties act on *Dosha Vishesh* i.e., *Bahu Drava Sleshama* and *Dushya Vishesh* i.e., *Kleda*. Further, drugs with their *Laghu*, *Ruksha*, and *Tikshnaguna* cause depletion of *Kapha* and *Meda*, leading to *Samprapti Vighatana*. *Katu Vipaka* of *Dravya* also works on *Mutravaha Srota* and reduces *Kleda*, *Meda* and hence, decreases the frequency of urine.

*Danti* (*Baliospermum montanum*), *Triphala* (*Terminalia chebula* Retz., *Terminalia bellerica*, *Emblica officinalis*), are considered to act on abnormally stored *Kapha Dosha* and *Medas* due to their *Rookshana* property. It also contains *Tikshna* and *Ushna* medications such as *Pippali*, *Danti*, and others that have a favorable effect on *Srotovishodhana*.

To break the *Samprapti*, *Tikta*, *Katu*, *Kashaya Rasa*; *Laghu*, *Ruksha Guna*; *Ushna Virya*, and *Katu Vipaka* correct *Kapha Dushti* and *Medo Dhatu Dushti* and cleanse *Dhatvagnimandya*, the bulk of the drugs in this formulation include *Deepana*, *Pachana*, and *Lekhana* properties. Additionally, *Tridosha Shamaka* (mostly *Kaphavatahara*) is a medicinal combination that helps treat *Vata Dushti*. Effects of the *Laghu* and *Rooksha Guna* include *Kledashoshak* and *Mootrasangrahaniya*. In the end, these characteristics help to relieve *Kshudha-Adhikya* and *Prabhoota-Avila Mutrata* (increased turbid urination) (Polyphagia). Additionally, the combination provides the body with nourishment

through the qualities of its constituents' *Balya*, *Jeevaniya*, and *Rasayana*, which stop *Dhatu* depletion and restore the patients' *Bala* (strength). The components of the Combination had a significant hypoglycemic impact, leading to progression towards health.

## CONCLUSION

*Ayurvedic* therapy considerably reduced polyuria and polydipsia, two symptoms of diabetes. In conjunction with dietary and lifestyle adjustments, *Ayurveda* resulted in substantial improvements in HbA1c and fasting blood sugar levels.

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