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# A CASE REPORT OF TYPE 1- DIABETES MELLITUS - AN AYURVEDIC APPROACH

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**ABSTRACT**

Diabetes mellitus type 1 account for 5% of cases of diabetes. It is estimated that about 80,000 children develop the disease each year. The pathophysiology in diabetes type 1 is destruction of beta cells in the pancreas, regardless of which risk factors or causative entities have been present. Thus, None other than insulin therapy is available for treatment of diabetes mellitus type -1. Present clinical trial focuses on case study of a 67 year old male patient having diabetes mellitus type-1 treated with an Ayurvedic formulation *'Madhumehahara Yoga.'* After 30 day treatment reduction of 28% in fasting and 17.55% in post prandial blood glucose was seen. Insulin dose reduced from 72units/day to 50 units/day. 0.48% reduction was seen in HbA1c level. Symptoms of *Madhumeha* also relieved markedly after treatment suggesting a curative role of *'Madhumehahara Yoga'* in type-1 diabetes mellitus.

**Key words**: *Madhumehahara Yoga*, diabetes type 1, diabetes mellitus, HbA1c, blood glucose

## INTRODUCTION

Diabetes mellitus is a chronic disease resulting from the metabolic disturbances in the body. Type 1 diabetes causes an estimated 5–10% of all diabetes cases[1] or 11–22 million worldwide.[2] Diabetes mellitus is rapidly becoming the world's largest silent killer. The incidence of type 1 diabetes has been increasing by about 3% per year.[3] Onset most often occurs in childhood, but the disease can also develop in adults in their late 30s and early 40s.[4]

This form of diabetes commonly results from a cellular-mediated autoimmune destruction of the β-cells of the pancreas. Markers of the immune destruction of the β-cell include islet cell auto antibodies, auto antibodies to insulin, auto antibodies to glutamic acid decarboxylase (GAD65) and auto antibodies to the tyrosine phosphatases IA-2 and IA- 2β.[5] One and usually more of these auto antibodies are present in 85–90% of individuals when fasting hyperglycemia is initially detected.[6] In this form of diabetes, the rate of β-cell destruction is quite variable, being rapid in some individuals (mainly infants and children) and slow in others (mainly adults). Some patients, particularly children and adolescents, may present with ketoacidosis as the first manifestation of the disease. Others have modest fasting hyperglycemia that can rapidly change to severe hyperglycemia and/or ketoacidosis in the presence of infection or other stress. Still others, particularly adults, may retain residual β-cell function sufficient to prevent ketoacidosis for many years; such individuals

eventually become dependent on insulin for survival and are at risk for ketoacidosis. Immune-mediated diabetes commonly occurs in childhood and adolescence, but it can occur at any age, even in the 8th and 9th decades of life.[7] Thus the American Diabetes Association proposed two subcategories for type 1 diabetes: type 1A or immunomediated diabetes and type 1B or idiopathic diabetes.[8] Absence of β-cell autoimmunity markers and lack of association with HLA haplotypes predisposing diabetes mainly characterize the latter subcategory. Individuals with this form of diabetes can develop ketosis/ketoacidosis and exhibit various degrees of insulin deficiency between episodes. The initial manifestation of the diabetes in these cases may be ketoacidosis similar to type 1A diabetes, although the course of the disease is unusual as insulin therapy is initially needed to maintain metabolic control and, after a variable period of time (usually within months), good control can be achieved with either diet or oral agents.[9] On the other hand, these patients differ from those with type 1A diabetes because their physical characteristics are more typical of patients with type 2 diabetes; they are often obese or overweight at the time of diagnosis and, in most of the cases, there is a family history of type 2 diabetes.[10]The classical symptoms of type 1 diabetes include polyuria (excessive urination), polydipsia (increased thirst), xerostomia (dry mouth), polyphagia (increased hunger), fatigue, and weight loss.[11]

This condition can be correlated to the *Madhumeha* in *Ayurveda*. As per Ayurvedic classics *Madhumeha* is a subtype of *Vataja Prameha*.[12] However, Acharya Sushruta has stated that all the Prameha when kept untreated, leads to *Madhumeha*.[13] Thus it can be considered as an advanced stage of *Prameha*. *Vata* and *Kapha* are main involved *Dosha* in pathogenesis of *Madhumeha*. Here *Vata* get aggravated either because of its own etiological factors or because of *Avarana* caused by *Kapha Pitta* and *Meda*. This provocated *Vata* carries the vital constituents of the body like *Vasa, Majja* and *Oja* towards *Basti* and excretes them outside through urine resulting in depletion of the *Dhatu*.[14]

Thus due to severe depletion of *Dhatu*, the symptom manifests are *Karshya, Daurbalya, Angasuptata* and *Parisaransheela* nature. Here mainly the function of *Vyanavayu* i.e. *Avyaahatgati* is get hampered because of the accumulation of vitiated Dushya at macro and microcellular level. The function of *Apanavaya* gets aggravated resulting in excretion of vital Dhatu through the urine outside the body. *Bahudravatva* of vitiated *Kapha*[15] causes disruption in the assemblage of body elements and provide ground for the accumulation of morbid matter in the tissues. Again *Kaphadosha* is the dominant factor in the pathogenesis of *Madhumeha* as its vitiation causes the vitiation of concordant body elements like *Meda, Mamsa, Kleda, Rasa, Vasa, Lasika* etc. This causes *Shaithilya, Alasya, Atinidra, Gaurava* etc.

**CASE HISTORY:**A 67 year old male patient came in the OPD of Panchakarma department, Dr. D.Y. Patil college of Ayurved & research centre on 3/01/2015 with complaints of fatigue, weakness, excessive sweating, polydypsia and occasional leg cramps. On taking detailed history of the illness, patient was found to have type 1 diabetes mellitus since 29 years. He was on insulin therapy since last 28 years in a dose of 72 units/day. Patient was asked for investigations i.e. fasting and post prandial blood glucose and HbA1c to assess the

severity of the disease. On 5/01/2015 he was reported to have fasting blood glucose 250mg/dl, post prandial 245mg/dl & HbA1c 11.

Patient was started with '*Madhumehahara Yoga*' 3g/day in three divided doses before meal with lukewarm water. Details of the formulation are given in Table-1.

**Table 1: Contents of *Madhumehahara Yoga***

| Drug (in powder form) | Latin name | Quantity |
|---|---|---|
| ***Amalaki*** | *Emblica officinalis* | 1 part |
| ***Haritaki*** | *Terminalia chebula* | 1 part |
| ***Bibhitaka*** | *Terminalia bellirica* | 1 part |
| ***Meshashringi*** | *Gymnema sylvestre* | 1 part |
| ***Haridra*** | *Curcuma longa* | 1 part |
| ***Daruharidra*** | *Berberis aristata* | 1 part |
| ***Vijayasara*** | *Pterocarpus marsupium* | 1 part |
| ***Karavellaka*** | *Momordia charantia* | 1 part |
| ***Jambubija*** | *Syzygium cumini* | ½ part |
| ***Indravaruni*** | *Citrullus colocynthis* | 1 part |
| ***Chitraka*** | *Plumbago zeylanica* | 1 part |
| ***Musta*** | *Cyperus rotundus* | 1 part |

The medicine was continued for 30 days. As Ayurvedic medication was started, the dose of insulin was tapered to 50units/day. Patient's blood glucose was monitored on weekly basis to avoid any sudden hike in blood glucose due to tapering of insulin dose.

**Pathyapathya**: For dietary changes, the patients were asked to stop sugar completely. He was also made to curtail the use of energy-rich foods like rice, potatoes, fried foods, and bakery products.

**Criteria for assessment:** The patient was examined weekly and suitable scoring pattern and objective signs were recorded to assess any changes present in the patients. After completion of 30 days of treatment, the efficacy of the therapy was assessed on the basis of the subjective as well as objective criteria.

## DISCUSSION

After 30 days treatment with '*Madhumehahara Yoga*' a reduction of about 28% in fasting and 17.55% in post prandial blood sugar was seen. Insulin dose reduced from 72units/day to 50 units/day. 0.48% reduction was seen in HbA1c level. On assessment of subjective parameters 75%, 66.67%, 100% & 50% reduction was found in fatigue, excessive sweating, polydypsia and occasional leg cramps. (Table 2)

**Table 2: Effect of therapy of Assessment criteria**

| Assessment criteria | Parameter | B.T. | A.T. | % change |
|---|---|---|---|---|
| **Objective** | FBS | 250 | 180 | 28 |
| | PPBS | 245 | 202 | 17.55 |
| | HbA1c | 11 | 10.5 | 0.48 |
| **Subjective** | Fatigue | 4 | 1 | 75 |
| | Sweating | 3 | 1 | 66.67 |

| | | | | |
|---|---|---|---|---|
| | Polydypsia | 2 | 0 | 100 |
| | Occasional leg cramps | 2 | 1 | 50 |

The effect observed can be attributed to the *Rasapanchaka* of the drugs involved in *Madhumehahara Yoga*. Most of the drugs are having *Ushna Virya, Katu Vipaka* & *Vata-Kaphahara* properties. *Chitraka* acts as a *Deepana Pachana* drug, thus reduces *Ama* at both *Dhatvagni* and *Jatharagni* level. *Jambubija, Haridra, Daruharidra, Musta, Haritaki, Bhibhitaki, Meshashringi, Vijaysara, Karvellaka* due to their *Laghu-Ruksha* properties reduces *Kleda* in the body that in turn corrects the *Dhatushaithilya*. Most of the drugs in the formulation are having *Tikta-Kashaya Rasa* which reduces *Madhurya* in the *Rasa, Rakta* and other *Jaliya Dhatu*. In modern parlance *Madhumehahara Yoga* appears to enhance endogenous insulin, possibly by regeneration/ revitalisation of the residual *beta* cells in insulin-dependent diabetes mellitus. Moreover, *Emblica officinalis* exhibits anti-diabetic activity on virtue of improvement in peripheral glucose utilization, increased insulin sensitivity, or anti-oxidant property.[16]It is a well known *Rasayana* drug which might have affected the β-cell destruction. *Triphala* is a combination that is found to have a hypoglycaemic effect.[17] Gymnemic acid IV present in *Gymnema sylvestre* is responsible for enhanced insulin-releasing action.[18] curcumin, demethoxycurcumin, bisdemethoxycurcumin, and ar-turmerone mainly contribute to the hypoglycaemic effects of *Haridra* via human peroxisome proliferator-activated receptor (PPAR)-gamma ligand-binding activity.[19] *Berberis aristata* inhibits hepatic gluconeogenesis in terms of prevention of proteolysis and lipolysis thus enhances the antihyperglycemic effect.[20] The gum resin of *Pterocarpus marsupium* is found to regenerate beta cells that produce insulin in the pancreas[21] Regarding *Momordia charantia* charantin, insulin-like peptide and alkaloid-like extracts possess hypoglycemic properties.[22] *Syzygium cumini* acts as antidiabetic by inhibition of α-glucosidase activity.[23] *Citrullus colocynthis* also possesses insulin tropic action.[24] However antidiabetic action of *Chitraka* and *Musta* is mainly due to antioxidant effect.[25, 26] During the course of treatment and even after 15 days of completing the treatment no adverse drug reaction was noted.

## CONCLUSION

The present study indicates that the *Madhumehahara Yoga* is effective in the treatment of Type 1 diabetes mellitus and did not produce any toxic side effects. However, proper clinical trials with large samples are needed to substantiate the observations so that beneficial alternative therapies can be adopted or integrated with conventional care.

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