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Review Article

ATTRIBUTION OF AYURVEDIC HERBS IN *MADHUMEHA*

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ABSTRACT

Now a days people are facing life style disorders and stressful mental conditions due to the hectic and busy schedule. *Madhumeha* is one among them. It is the single most metabolic disease affecting the organ/system in the body. It is a burning problem in today's scenario. It has been grouped under 20 *Prameha* described by our ancient *Acharayas*. This disease does not originate suddenly. Its pathophysiology takes long term. Any of *Prameha* neglected ends up in *Madhumeha*. It cannot be completely cured but can be prevented by food, medicines, life style etc. Administration of Ayurvedic herbs can play a very beneficial role in preventing this disease as well as its complication because they are oriented towards preventive and treatment approach. Various drugs of herbal origin as well as mineral origin is being mentioned in Ayurvedic texts Herbal medications shows anti diabetic effects and bring varying effects on the blood sugar level with minimal side effects. Role of herbs such as *Ashwagandha*, *Haridra*, *Daruharidra*, *Aamlaki* etc. in Pre diabetic, Diabetic and its complications along with effects of such herbs in experimental studies will be explored in present paper.

INTRODUCTION

Madhu meha which literally means "sweet or honey like urine" is the Sanskrit name given for Diabetes mellitus. Vitiating of *Vata Dosha* has many clinical similarities Amongst the twenty types of *Prameha* described in Ayurveda, *Madhumeha* cause by vitiating of *Vata Dosha* has many clinical similarities to the modern day Diabetes. *Madhumeha* is the metabolic disorder in the endocrine system. The majority 90% of cases of diabetes mellitus is type 2 diabetes. 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⁾ It is a condition in which person passes honey like sweet urine. *Madhumeha* is one among 20 types of *Prameha* (urological disorder) described in various Ayurvedic classics i.e. *Charaka samhita*, *Sushruta samhita*, *Ashtanga sanghara*, *Madhava nidana*, *Yoga ratnakara* etc. In *Ayurveda*, *Madhumeha* is mentioned one of the main diseases in which quantity and frequency of urination increases.⁽²⁾ *Prabhut-avila mutrata* is considered as

a *Samanya lakshana* of *Prameha*.^[3] According to classic *Ayurvedic* literature, all types of *Prameha* start with the derangement of *Kapha* that spreads throughout the body and mixes with fat (*Meda*). *Meda* is having properties similar to that of *Kapha*. *Kapha* mixed with fat passes into urinary system thereby interfering with normal urine excretion. ⁽⁴⁾ Acharya Madhava described term *Prameha* as "*Prakarshena Prabhutam Prachuram Varam Varam Va Mehati Mutratyagam Karoti Yasmina Roge Sa Pramehah*" (Madhava Nidana 33/1)⁽⁵⁾ which means repeated (*Prakarsha*) excessive (*Prabhoota*) and turbid urination in terms of frequency, quantity etc. *Madhumeha* included among the *Astamaharoga* (eight major disorders) in *Charaka* (*Charaka Samhita Indriyasthana 9/8-9*)⁽⁶⁾ which indicates the graveness of the disease given by the Acharyas.

It In chronic hyperglycemia dysfunction of various organs especially the kidneys, eyes, nerves and heart take place. More than 135 million people worldwide are affected from it. When blood glucose level raises above 160-180 mg/dl glucose spills into

the urine. This causes kidney to secrete additional water to dilute the large amount of glucose. As a result of this excessive urination, abnormal thirst is there. Obesity, hypertension and level of physical activity plays contributory role and modulate the phenotyping of the disease. (7)

One of the most important etiological factors implicated in its development is damage by free radicals. Anti-diabetic with antioxidant properties would be more beneficial. WHO has listed 21,000 plants which are used for medicinal purposes around the world.

MATERIAL AND METHOD

Different *Ayurvedic* classical books, research papers and journals were referred to fulfil this part. It comprises subsections dealing with various concepts of *Madhumeha* and role of herbal drugs in prevention and treatment of *Madhumeha*.

Need of Herbal Drugs

Lots of agents are available to control and to treat diabetic patients, but total recovery from diabetes has not been reported up to date. Drugs treatments are not always satisfactory in maintaining it. Patients with diabetes frequently use complementary and alternative medications including the *Ayurvedic* medication. The purpose of treating prediabetes is to prevent diabetes from setting in. Prediabetes is a hint that the person might develop diabetes in future. According to *Ayurveda*, If *Prameha* is left untreated, it leads to *Madhumeha*.⁽⁸⁾ Therefore it can be very well reversed with suitable lifestyles from developing it.

Drug treatments are not always satisfactory due to adverse effects. So alternative to these synthetic agents medicinal herbs provide potential sources of hypoglycemic drugs & are widely used in several systems to prevent *Madhumeha*. These drugs also improve general debility along with providing much needed antioxidant property in diabetics. Free radicals are capable of damaging cellular molecules, DNA, Proteins and lipids leading to altered cellular function. Thus herbs having anti-oxidant property. Capable of neutralizing free-radicals & are very much effective. Diabetes is mainly due to Oxidative Stress i.e. increasing in reactive oxygen species which may lead to many major effects. Induction of oxidative stress leads to onset of diabetic complications; anti-oxidant herbal medicine work at this level. Plants containing natural anti-oxidant such as Tannins, Flavonoids, C and E vitamins have the ability to maintain beta cells performances and thus decrease glucose levels in the body. Traditional antidiabetic plants may provide new oral

hypoglycemic compounds for many rural populations in developing countries

Role of *Tikta Rasa* in *Madhumeha*

Herbs having *Tikta Rasa* predominately are used in *Madhumeha*. *Tikta Rasa* have *Vata* and *Aakash* as *Panchbhautik* composition⁽⁹⁾. *Vata* due to *Ruksha Guna* will do *Soshan* of *Dravavash* thus there will be *Stroto Vishodan*. *Aakash* due to *Sukshama Guna* help in the effective and easily entry.

Role of Tannin: Tannin improves pancreatic beta cell function thus increases insulin secretion.

Herbs For Pre- Diabetes

Turmeric & *Amla* combination is very effective in pre-diabetic management. *Neem* Leaves /Curry Leaves are not only good for improving digestion and taste of food, but is also good for fighting pre-diabetes.

Herbs For Diabetes

Acc. to Charaka In *Charak Nidan* - chapter 4, *Charak Chikitsa* - chapter 6

Samanya Premha Nashak Yoga: Daruhaldi, Devdaru, Amla, Harad, Nagarmotha for drinking.

Herbs For Diabetic Complications⁽¹⁰⁾

<i>Chitraka</i>	Nerve damage
<i>Manjistha</i>	Foot ulcers
<i>Punarnava</i>	Kidney damage
<i>Arjuna</i>	Heart disease
<i>Amalaki</i>	Eye damage

Mode of Action

1. Either increase the insulin secretion
2. Increase the insulin sensitivity at receptor level
3. Some herbs have been proven to help in regeneration of beta cells and in overcoming resistance
4. To maintain the normal blood sugar level, some herbs reported to possess antioxidant activity and cholesterol lowering action.

Role of Herbal Drugs

As per ancient literature, more than 800 plants are reported to have anti-diabetic properties. More than 1200 plants are used in traditional medicine for their allied hypoglycemic activity. Herbal medicines provide symptomatic relief and along with it assist in the prevention of the secondary complication of the disease. The medicinal values of various plant parts have been studied by many scholars in the field of diabetic research in present era. Following herbs have been used to help regulate blood glucose level and aid in the management of hyperglycemia.⁽¹¹⁾

Herbs	Chemical Composition	Pharmacological Action
<i>Amlaki</i>	VIT C, Flavones, Tannin	Prevent insulin resistance, proper absorption of insulin leading to drop in blood sugar.
<i>Ashwaganda</i>	Withandides, Withagerin	Insulin sensitivity is improved. Stabilize blood sugar & lower cholesterol.
<i>Vijaysar</i>	Epicatechin, Marsupinol	Enhance insulin release. Stimulate beta cells. Help in conversion of pro-insulin to insulin.
<i>Tejpatra</i>	Linalool	Bark improves blood sugar glucose and CVD. Reduces risk factors.
<i>Daruharidra</i>	Berberine	Anti-hyperglycemic effect in root. As effective as metformin. Integrate insulin signalling.
<i>Methi</i>	Polyphenol, Vit.C	Seeds increase the insulin sensitivity. Reduce high cholesterol
<i>Chitrak</i>	Plumbagin	Neuropathy, Anti-oxidant, CNS Stimulant, Retinopathy
<i>Karvellak</i>	Charantin (Seeds)	Increase the mass of Beta cells in pancreas and insulin production.
<i>Nimb</i>	Nimbin, Tannin	Helpful in preventing and delaying the onset of diabetes
<i>Jambu</i>	Jambolin	Specific action on pancreas. controls conversion of starch to sugar
<i>Turmeric</i>	Curcumin	It has rich anti-diuretic property. Support pancreatic function which suppresses excretion of sugar through urine. Anti-oxidant reduces free radicals.

Experimental Study on few Herbs

- Aegle marmelos*:** The aqueous extract of *A. marmelos* leaves significant reduced blood glucose level and showed anti-oxidative activity on alloxan induced diabetic rats. Similar antidiabetic activity reports found in other trails where Fenugreek seeds (*Trigonella foenum-graceum* Linn.) and *Bael* leaves (*Aegle marmelos*, Corr.) individually and collectively used in non insulin dependent diabetes mellitus patients.⁽¹²⁾
- Aloe vera*:** The extracts of *Aloe vera* showed hypoglycaemic activity on hyperglycaemic rats.⁽¹³⁾ *Aloe vera* gel and its isolated compounds showed hypoglycaemic activity on non-insulin dependent diabetes mellitus mice.⁽¹⁴⁾
- Azadirachta indica*:** Aqueous extract of *Neem* leaf extract in streptozotocin induced models noticed good anti-hyperglycaemic potential in male albino rats of wistar strains.⁽¹⁵⁾
- Cinnamomum tamala*:** The aqueous extracts of *C.tamala* exhibited antihyperglycemic as well as antioxidant activities in streptozotocin-diabetic rats.⁽¹⁶⁾
- Gymnema sylvestre*:** The extract of leaves of *Gymnema sylvestre* noticed antidiabetic activity in alloxan induced diabetic rats.^(17,18)
- Hemidesmus indicus*:** Aqueous extract of the roots of *Hemidesmus indicus* demonstrated anti-diabetic activity on streptozotocin induced diabetic rats.⁽¹⁹⁾
- Mormodica charantia*:** An aqueous extract of seeds of *M.charantia* showed in streptozotocin induced diabetic rats.⁽²⁰⁾ Similarly crude juice extract of *M.charantia* showed antidiabetic activity in rats in other trail.⁽²¹⁾
- Ocimum sanctum*:** *O.sanctum* leaves showed antidiabetic activity in experimental models.^(22,23)
- Piper nigrum*:** The aqueous extract of *Piper nigrum* seeds and *Vinca rosea* flowers evaluated in alloxan induced diabetic rats which showed antidiabetic activity.⁽²⁴⁾
- Syzygium cumini*:** Different extracts of *Syzygium cumini* possessed antidiabetic potentials against STZ-induced diabetic rats.⁽²⁵⁾
- Tinospora cordifolia*:** Various extracts of *Tinospora cordifolia* stem were noticed potent antidiabetic activity in streptozotocin induced diabetic rats.⁽²⁶⁾
- Trigonella foenum-graecum*:** Soluble dietary fibre fractions of *T. Foenum-graecum* were evaluated which exhibited antidiabetic effects.⁽²⁷⁾ The aqueous extract of *Trigonella foenum-graecum* leaves possessed a hypoglycaemic effect in normoglycaemic and alloxan induced hyperglycaemic rats.⁽²⁸⁾

CONCLUSION

Madhumeha (Diabetes mellitus) is a chronic metabolic disorder in which there is impaired carbohydrates, fat and protein metabolism. Still to the medical system limiting *Madumeha* without any side effects and complications is a challenge. In recent years, Ayurvedic herbs have become a subject of interest because of their beneficial effects on human health. Herbs have been proven to be effectual in the management and stabilization of blood glucose levels as well as treatment. Herbal medicines with antihyperglycemic effects are increasingly sought by patient use with diabetes. They are most commonly used alternative therapy for blood sugar control. Only their efficacy and safety must be evaluated for their better use.

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