



ROLE OF AYURVEDIC DRUGS USED IN MADHUMEHA (DIABETES MELLITUS)

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ABSTRACT

Diabetes mellitus is becoming fastest considerable disease in the world. India has been estimated with the fastest growing population of diabetes. It is a metabolic disorder which may result from deficiency or dysfunction of the insulin production. The main causative factor is said to be sedentary life style and food habits. In Ayurveda it is described in *vataja pramehas*,^[1] which can be managed conservatively with exercise, diet and some ayurvedic drugs showing anti diabetic effect. The present review article was undertaken to explore anti diabetic effects of various ayurvedic drugs.

KEYWORDS: Madhumeha, Ayurveda, Diabetes Mellitus, Prameha.

INTRODUCTION

In modern era, human life is full of various mental stresses and strain. Struggle for existence give rise to increased mental stress and end result of all this is mental ill health disease like hypertension, diabetes and other psychosomatic disease. Diabetes mellitus is becoming the world's largest silent killer. India has been projected by WHO as the country with fastest growing population of diabetic patients. However, if a person sticks to an ayurvedic preventive strategy right from the beginning can easily prevent this disease and control if he is already suffering. Diabetes is described in Ayurveda as *madhumeha/kshudrameha*. Amongst twenty types of *pramehas* described in Ayurveda, *Madhumeha* caused by the vitiation of *vata dosha* has many clinical similarities to the modern day diabetes mellitus. The word Diabetes mellitus has been derived from two words diabetes which means 'Siphon through' and *mellitus* means 'sweetened with honey'. 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 insulin.^[2]

Madhumeha (Prameha)

Pramehas are a list of urinary disorders, especially characterized by the profuse urination with several abnormal quantities due to doshic imbalances. The main cause of prameha is lack of exercise, improper food habits and food habits which come under the category of *ushna*, *snigdha* and *guru* are the primary cause of this disease. Food that increases *kapha*, *medha* and *mootra* are the etiological factors of the pramehas. The word *prameha* is derived from, *pra-means excess, meha-*

khasrane-passing of urine. Madhumeha included among the *ashtamaharoga* (eight major disorders) in *Charaka*.

Main Causes: Addiction to the pleasure of sedentary habits, sleep, curd soup of the meat of the domesticated and aquatic animals and animals inhabiting marshy land milk preparations, freshly harvested food articles, preparation of jaggery and all *kapha* aggravating factors are responsible for the causation of prameha.^[1]

Classification

1. *Prameha* is classified aetiology into *sahaja* (hereditary) and *Apathya nimittaja*. *Sahaja* means due to *matapitabheejadoshakruit* (chromosomal defect from parents).

According to physical management

1. *Apatharpana uthaja prameha* describing the lean diabetic.
2. *Santharpana uthaja prameha* describing the obese diabetic.

According to the doshic causes these pramehas are classified as twenty types:

1. *Vataja pramehas*: There are totally four types of *vataja pramehas*.
2. *Pittaja pramehas*: There are totally six types of *pittaja pramehas*.
3. *Kaphaja pramehas*: There are totally ten types of *kaphaja pramehas*.

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

Samprapthi Ghatakas

- Dosha- Vata, Pitta, Kapha
- Dushya- Meda, rakta, shukra, jal, vasa, lasika, majja, rasa, ojas, Mamsa.
- Srotas- Mootravaha
- Srotodushti- atipravrutti

Vyaktasthana- Mootravaha srotas.

Samprapti

In Ayurveda, Kapha undergoing increase by the etiological factors reaches various dooshyas like rasa, rakta etc. as there is a shaithilaya in the body and it being fluid predominant spread all over the body and gets vitiated, while spreading it get mixed with meda (fat adipose tissue), mamsa (muscle) and kleda (body fluids). Body fluids which got vitiated draw them to the urinary bladder and produce prameha, similarly pitta affects them. Vata also brings vitiation in them and produce prameha.

Clinical Symptoms**Specific Ayurvedic Symptoms.**

1. Malina danta	Tartar in the teeth
2. Hasta pada daha	Burning sensation of hands and feet
3. Deha chikkanata	Excess glossy/oily skin
4. Trishna	Excessive thirst
5. Madhuryamasya	Fleeing sweetness in the mouth
6. Prabhuta mutrata	Excessive urination
7. Avila mutrata	Turbid urination
8. Madhu samana varna	Urine having colour of honey
9. Sweda	Excess perspiration
10. Anga gandha	Bad body odour
11. Shithilanganta	Flaccidity of muscles
12. Shayana asana swapna sukha	Desire for sedentary life style
13. Shitapriyatwa	Desire for cold food and environment
14. Gala talu shosha	Dryness of palate and throat

According To Modern (Main Symptoms)

- Polyuria (Excessive urine)
- Polyphagia (Excessive hunger)
- Polydypsia (Excessive thirst)
- Tiredness
- Polyneuritis (Numbness/Tingling)
- Visual disturbance

Drugs Use In Hyperglycemia^[3]**1. Asana^[4]**

Botanical name: Pterocarpus marsupium

Family: Fabaceae

Classical Names

Asana, Beejaka, Peetashalaka, pitasara, bandhookapushpa, Priyanka, sarjaka.

Vernacular names

English: Indian kino tree.

According to modern, the beta cells of islets of Langerhans in pancreatic gland are responsible for the secretion of the hormone insulin. Among other things, insulin is extremely essential for utilization of carbohydrates in our body. If insulin is absent due to metabolic disorder or its not performing its function properly, then these carbohydrates accumulate in the blood stream in the form of glucose. The glucose then collects in urine which in fact is the primary characteristics of diabetes mellitus. However this can be said either a deficiency in a production of insulin by the pancreas or a dysfunction of the insulin production by the pancreas.

Premonitory Symptoms

Early symptoms of the disease accumulation of dirt on the (teeth, mouth, palate, gums, throat, tongue, eyes, nose, ears), feeling of burning sensation in the palms and soles, stickiness of the skin all over the body, thirst and sweet taste in the mouth, moothra madhuryam (sweetness of the urine).

Hindi: Bijasal, vijyasara, biar

Punjabi: Chandanlal, channanlal

Botanical description: A moderate sized to large deciduous tree, upto 30m high, leaves imparipinnate, leaflets 5 to 7 oblong.

Parts used: leaves, heartwood, flower gum.

Action and uses: The heartwood is astringent, bitter, anti-inflammatory urinary astringent, rejuvenating. It is useful in inflammations Bruises, Urethrorrhoea diabetes, ophthalmopathy.

Ayurvedic properties

Rasa- kashya, tikta

Guna- laghu, ruksha

Veerya - ushna

Vipaka- katu

Doshagnata: kaphapittashamaka

Rogaghanata: Madhumeha, Prameha, Sthaulya, Shotha
Karma:
Mootrasangrahaniya, Madhumehahara, Raktashodhaka, Rasyana

Dose powder: 3-6gms, Decoctation 50-100ml, Gum 1-3gms.

Pharmacological activities: Extract of heartwood shows statistically significant hypoglycemic action in fasting rabbits 3 and 5 hours after oral administration. No harmful effect was noticed in doses which showed hypoglycemic action. Alcoholic extract of stem significantly lowered blood sugar and improved glucose tolerance of rabbits.

Therapeutic effect: Clinical trial on *P. marsupium* heartwood (extract, decoction, powder and infusion) showed encouraging hypoglycemic effect in number of diabetic patients. Considerable reduction in sugar level in blood and urine were observed⁷.

Formulations

Nyagrodhadi churna, Asanabilvadi taila.

2. Bimbi^[4]

Botanical name: *Coccinia grandis*

Family: Cucurbitaceae

Classical names: Bimbi, Tundi, Raktphala, Tundikeri, Bimbika, Piluparni.

Vernacular names

English-Ivy guard

Hindi-Bimbi

Punjabi-kanduri, ghol, kundru.

Botanical description: scandent herbs, leaves petiolate 5-10 cms long, entire to palmately lobed minutely denticulate.

Parts used: Root, leaf, fruit.

Action and uses: the roots are cooling and are useful in vomiting, burning sensation, diabetes and uterine discharge. The fruits and leaves are bitter variety are bitter anti-inflammatory digestive liver tonic and anti spasmotic. They are useful in wounds hepatic disorder, jaundice, fever, asthma, diabetes, anaemia.

Ayurvedic properties

Rasa- tikta

Guna-laghu, ruksha, tikshna

Veerya-ushna

Vipaka- katu

Doshaghanta-kaphapittakavikara, shotha, varna, kasa, shawasa, ojomeha, jwara

Karma-yakradotejaka, mootrasangra, madhumehahara.

Dose- Juice 10-20ml.

Pharmacological activities: Hypoglycaemic, Antiprotozoal, Anti-oxidant enzyme, Anti-diabetic Hepatoprotective.

Therapeutic evaluation: A clinical trial was taken on 30 non insulin dependent diabetic patient to assess the efficacy of *Coccinia indica* in diabetic mellitus patient. The patient were administered aqueous extract of leaf concentrated and made into pellets each weighing 3 gm. One pellet twice a day before meal was administered daily. High calories diet restricted during the treatment. Follow up was done at 6 weeks interval with 2 consecutive periods. The drug was found effective in controlling the hyperglycemic and simultaneously exerted protective influence against the hyperlipidemia.

The ethanolic extract of *C. indica* leaves possess significant hypoglycemic, hypolipidemic, anti oxidant effects in alloxan induced model albino rats.

Formulations: amritprasha ghrita, varunadighana kwath.

3. Karaveli^[4] *Momordica charantia*

Order: cucurbitaceae

Classical names: karaveli, karavella, kathilla, sushavi

Vernacular names

English: bitterguard, carilla fruit

Hindi: karela kareli

Punjabi: karela, karla

Botanical description: A climbing annual, much branched. Leaves simple divided into 5-7 lobes.

Parts used: root, leaf, fruit seed.

Action and uses: Roots are bitter astringent. Leaves are used in burning sensation of the sole, ulcers fever measles, small pox. Fruits are bitter, anti-diabetic, digestive, anti-inflammatory and tonic.

Ayurvedic properties

Rasa: tikta, katu

Guna: laghu

Veerya: ushna

Doshaghanta: kaphapittashamaka

Rogaghanta: prameha, medoroga, kamla, agnimandya, amadosha

Karma: pramehaghana, jwaraghana, krimighanay, akritvikara

Doses: Juice 10-20ml.

Pharmacological activities

Antispasmodic, Hypoglycemic, Antidiabetic, Hypolipidaemic, Immunomodulatory.

Therapeutic effect: The pure protein termed as p-insulin extracted from *M. charantia* fruits in crystalline form was tested, in a controlled clinical trial, for its efficacy as a hypoglycemic agent in 9 patients of primary diabetes mellitus (6 patients with juvenile diabetes one with

maturity onset diabetes and 2 with chemical diabetes) when p insulin was administered simultaneously, a hypoglycemic effect was noticed, the onset effect is noticed within half to one hour. In the juvenile diabetes the peak effect was observed after 4-8 hours. Maximum blood fall in sugar being notice after 12 hours and in the patients with chemical diabetes 6 to 8 hours. The mean fall in the patient was 45.8-13.6percent. No hypersensitivity reaction was noted in any of the patient.

In another study polypeptide p obtained from the fruits, seeds and cultured m. charantia was administered, simultaneously in 19 patients of diabetes mellitus. Hypoglycemic effect was observed in juvenile as well as maturity onset diabetes patients. The peak effect in juvenile diabetes.

Momordica charantia was administered in 100 patients of madhumeha i.e non insulin dependent diabetes mellitus for a period of six weeks. The results were analysed on the basis of estimation of fasting and postprandial blood suger level conducted before and after the trial. The result showed that in 25 patients suger was completely controlled and 17 patients mildly controlled.^[8]

Investigation were carried out to evaluate the effect of momordia charantia on the glucose tolerance of maturity onset diabetic patients. The fruit juice M. charantia was found significantly improve the glucose tolerance of 73% of patient investigated.

Formulations

Vidyavallabha rasa, brihat sarvajwarahara lauha

1. Methi^[4] Trigonella foenum-graecum

Order: Fabaceae

Classical names: Methi, Methika, Methini

Vernacular names

English: Fenugreek

Hindi: Methi

Punjabi: Methri, Methum, Methi

Botanical description: An erect annual herb 30-50 cm tall, aromatic leaves.

Parts used- leaf, seed.

Action and uses: They are useful in fever, enlargement of liver, spleen diabetes.

Ayurvedic properties

Rasa- tikta

Guna-laghu,snigdha

Veerya-ushna

Vipaka-katu

Doshaghanta: vatakaphashamaka

Rogaghnata- Jwara, prameha, vedna, agnimandhya, daurbalya

Karma deepna, pachana, hypoglycemic

Doses- Seed powder- 3 -6 gms.

Therapeutic effect: Effect of methika churna (fenugreek powder) were examined on 15 people of type-2 diabetes (daily dose 9gm, given for 3 months). Significant decrease in blood suger level, serum cholesterol and triglycerides was observed. This indicates that fenugreek powder is effecting in controlling blood sugar and triglycerides.

Formulations: Chauterbeeja churna, methimodaka

2. Jambu^[4] Syzygium cumini

Order: Myrtaceae

Classical names: Jambu, Mahaphala, Mahajambu, Raj jambu

Vernacular names

English: Jamun, Black plum

Hindi: Jamun, Jaman, Jambhal

Punjabi: Jammu

Botanical description: A large or medium sized evergreen tree. Leaves coriaceous, variable in size, elliptic, obovate-oblong. Fruits ovoid or globase, pink, turning black purple when fully ripe.

Parts used: Bark fruit, seeds, leaf.

Action and uses: The bark is astringent sweet, sour, acrid, diuretic, digestive, antibacterial. It is useful in diabetes leucorrhoea, gastric disorders, wounds and to strengthened teeth and gums.

Ayurvedic properties

Rasa-kashya, amla

Guano – laghu, ruksha

Veerya-sheeya

Vipaka-katu

Doshghanta –pitta shamka

Rogaghanta –madhumeha, udakmeha, prameha, ajeerna, shola.

Karma- deepna pachana, mootrasangrahaneeya, yakriduttejaka.

Doses: juice 10-20ml

Powder: 3-6 gm

Pharmacological activities: Hypoglycemic, antiviral, anti inflammatory, anti viral.

Therapeutic evaluation

A clinical trial was conducted on 80 patients on non insulin dependent diabetes mellitus. All the patients were treated with Eugenia jambolana seed powder 12gm per day in three divided doses for 3 months. The drug prosume good symptomatic relief along with regulation of blood sugar. It did not show anti side effects.^[5]

In non insulin dependant diabetes mellitus cases an ayurvedic formulations (code name ayush-82, containing jambu seeds as one of the constituents) and shudha

shilajitu were orally administered for a period of 24 weeks. Fasting and post prandial blood sugar were examined at 6 weeks intervals. There was significant reduction in both fasting and post prandial blood sugar in both in males and females.

A clinical study was conducted on 25 patients of type 2 diabetes with a herbo mineral property preparation of which jambu seeds was one of the constituent the patients were administered 2 tabs 3 times a day in addition to regular sulphonylureas over a period of six weeks. This indicates that the compound preparation can be an useful adjuvant in poorly controlled type 2 diabetes.

Different extracts of *Syzygium cumini* possessed anti diabetic potential against STZ- induced diabetic rats.^[6]

Formulations

Pathadya churna, brihallavangadya churna

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