

A STUDY ON *MUTRASANGRAHANIYA MAHAKASHAYA* OF *CHARAK SAMHITA* W.S.R ITS ANTIDIABETIC PROPERTIES

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ABSTRACT

Due to modern life style and stressful mental conditions, world's population have invited many distressing diseases. Diabetes mellitus (DM) is described in Ayurveda as *Madhumeha/Kshaudrameha*, which literally means excessive urine with sweet taste like honey. The number of people suffering from diabetes all over the world is increasing progressively. *Acharya Madhava* described the term *Prameha* as repeated (*Prakarsha*), excessive (*Prabhoota*) and turbid urination which shows increase in terms of frequency and quantity and *Madhumeha* is one of the type of *prameha*. Ayurvedic medicine is oriented toward prevention, health maintenance and treatment of diseases. There is large number of drugs of herbal and mineral origin mentioned in Ayurvedic texts for the treatment of *Madhumeha*. Many drugs present in some herbal medications showing antidiabetic effects, bring varying effects on the blood sugar levels with minimal side effects. There are some herbs present in our Ayurvedic text which have antidiabetic effect but there *madhumehahar guna* is not given directly in Ayurveda text, we have to use *tantrayukti* to find out this properties. *Mutra sangrahaniya mahakashaya* is given in charak samhita, where *mutra sangrahaniya* means the drugs which have anti diuretic properties; main *lakshan* of *prameha* is *prabhoot avil mutrata*, so by its *mutra sangrahaniya* action these drugs also helps to treat *prameha* also *madhumeha* (diabetes). The present review article was undertaken to explore the antidiabetic effects of *mutra sangrahaniyamahakashaya* in *Madhumeha* (diabetes mellitus).

Keywords: antidiabetic, *Madhumeha*, *Prameha*, *Mutra sangrahaniya mahakashaya*

INTRODUCTION

Modern life style and stressful mental conditions nowadays have called for many distressing diseases, and Diabetes Mellitus – a perfect example for lifestyle disorders. Diabetes Mellitus (DM)

in Ayurveda is referred to as *Madhumeha* or *Kshaudrameha*, which literally means excessive urine with sweet taste like honey. The number of people suffering from diabetes all over the world

is increasing progressively. Amongst the twenty types of *Pramehas* described in Ayurveda, *Madhumeha* caused by vitiation of *vata dosha* has many clinical similarities to the modern day Diabetes mellitus. *Madhumeha* consists of two words-‘*madhu* and *meha*’ where ‘*madhu*’ denotes sweetness and ‘*meha*’ stands for urination. So, the disease in which the urination is having urine quality concordant with *madhu* (honey) in its colour, taste, smell and consistency called along with the pathogenic features of *Prameha* like increased frequency and quantity of urine i.e *prabhutavil mutrata* is *Madhumeha*. [1]

Throughout world various health systems have not been able to manage diabetes efficiently. In the management of diabetes, oral hypoglycaemic medications (e.g. metformin etc.), insulin and lifestyle managements are followed. Lifestyle modifications are recommended to control diabetes which includes patient education, dietetic support and controlled physical exercise with the goal of keeping both short-term and long-term blood glucose levels within controlled limits. The main emphasis in diabetes management lies on the use of medications for keeping blood sugar levels as close to normal (euglycemia) as possible, without causing hypoglycemia. The most common side effect of these includes weight gain, nausea, rash, or gas. Examples of more serious side effects are heart issues, liver damage, or low blood sugar. In such a scenario, the ancient Ayurvedic principles of preventive (*Nidanparivarjan*) and purificative measures (*Shodhan Chikitsa*) with due consideration of appropriate single/polyherbal formulations (*au-shadi*), diet (*pathya-apathya*) management have proved to be fruitful for better wellbeing in *Madhumeha* (Type-II diabetics) patients. With conventional therapies managing diabetes may not always be easy, but with Ayurvedic management for *Madhumeha*, which is oriented toward prevention, health maintenance and treatment, one can stay healthy with benefits of a personalized treatment plan, diabetes-friendly

diet, and lifestyle. In Ayurveda, plants are always an excellent source of drugs; in fact many of the presently available modern drugs were derived either directly or indirectly from them. There is large number of drugs made of herbal and mineral origin mentioned in Ayurvedic texts, which were advised for treatment of *Madhumeha*. Some plants preparations used as anti-diabetic medications show significant effect on lowering the blood sugar levels with minimal side effects. These drugs also improve general debility along with providing much needed antioxidant property in diabetics. The medicinal values of various plant parts have been studied by many scholars in the field of diabetic research in present era.

Mutra sangrahaniya mahakashaya is given in *charak samhita*, where *mutra sangrahaniya* means the drugs which have anti diuretic properties ;main *lakshan* of *prameha* is *prabhoot avil mutrata* , so by *mutra sangrahaniya* action these drugs also helps to treat *prameha* and *madhumeha*(diabetes) [2]

List of Mutra SangrahaniyaMahakashayagana drugs – Drug which helps to restore normal quantity of urine –(anti-diuretics) [2]

- a) *Jambu* (*Syzygiumcumini* (Linn) Skeels)
- b) *Amra* (*Mangifera indica* Linn.)
- c) *Plaksha* (*Ficus lacor* Buch-Ham.)
- d) *Vata* (*Ficus bengalensis* Linn.)
- e) *Kapeetana* (*Albizzia lebbeck* Benth.)
- f) *Udumbara* (*Ficus racemosa* Linn.)
- g) *Ashvattha* (*Ficus religiosa* Linn.)
- h) *Bhallataka* (*Semecarpus anacardium* Linn.)
- i) *Ashmantaka* (*Ficus rumphii* Blume.) and
- j) *Somavalka* (*Acacia catechu* Willd.)

Ayurvedic and Modern properties (different researches) of Mutra SangrahaniyaMahakashaya gana drugs-

A) *Jambu* (*Syzygium cumini* (Linn) Skeels.)-

Properties -

Rasa – kashay, Guna – laghu, ruksha, virya – sheet, vipak – katu

Karma – vata vardhak, kaph pitta hara, grahi.

Therapeutics Uses-

i) Its *beejmajja* powder has *mutra sangrahaniya* properties so its *beej majja* is given in *prameha* and *madhumeha*.

ii) Its fresh juice is used in *puymeha* (one of the type of *prameha*)

Dosage - Fresh juice – 10-20 ml, powder – 3-6 gm.

Modern Researches-

Different parts of the jambolan especially fruits, seeds and stem bark possess promising activity against diabetes mellitus and it has been confirmed by several experimental and clinical studies. In the early 1960s to 1970s, Chirvan-Nia and Ratsimamanga[3], Sigogneau-Jagodzinski *et al*[4], Lal and Choudhuri[5], Shrotri *et al*[6], Bose and Sepha[7] and Vaish[8] reported the antidiabetic activity of various parts of jambolan in diabetic animals.

Tea prepared from leaves of jambolan was reported to have antihyperglycemic effect[9].

The stem bark of the plant could induce the appearance of positive insulin staining cells in the epithelia of the pancreatic duct of treated animals[10]

B) *Amra* (*Mangifera indica* Linn.)–

Properties -

Rasa – kashay (bark, seed), Guna – laghu, virya – sheet, vipak – katu

Karma – vata hara (pipen fruit), kaph pitta hara(others part), hradya, grahi.

Therapeutics Uses-

i) its *beejmajja* powder has *mutra sangrahaniya* properties so its *beej majja* is given in *prameha* and *madhumeha*.

Dosage - Fresh juice – 10-20 ml, powder – 3-6 gm.

Modern Researches –

A 50% ethanolic extract of the leaves of MI produced a significant hypoglycemic effect at a

dose of 250 mg/kg, both in normal and streptozotocin-induced diabetic animals. The stimulation of β -cells to release insulin was thought to be part of the mechanism of action.[11]

The effect of the aqueous extract of the leaves of MI on blood glucose level in normoglycaemic, glucose - induced hyperglycaemic and streptozotocin (STZ)-induced diabetic rats has been assessed. The results indicate that the aqueous extract of the leaves of MI possess hypoglycaemic activity. This action may be due to an intestinal reduction of the absorption of glucose.[12]

The leaves of MI used for antidiabetic properties using normoglycaemic, glucose-induced hyperglycaemia and streptozotocin (STZ) induced diabetic mice. The aqueous extract of the leaves of MI possess hypoglycaemic activity.[13]

The effect of mango (MI) ingestion on blood glucose levels of normal and diabetic rats has been studied. The results from this research suggest that mango flour can possibly help in the treatment of diabetes.[14]

C) *Plaksha* (*Ficus lacor* Buch-Ham.)-

Properties -

Rasa – kashay, Guna – ruksha, guru, virya – sheet, vipak – katu

Karma – kaph pitta hara, mutra sangrahaniya.

Therapeutics Uses-

i) due to *mutra sangrahaniya* properties so it is used in *prameha*.

Dosage - Decoction -50 -100 ml.

Modern Researches –

It is also used as an antibacterial, antifungal (Swami and Bisht, 1996) and anti-diabetic conditions (Chandira *et al.*, 2010) [15]

D) *Vata* (*Ficus bengalensis* Linn.) –

Properties -

Rasa – kashay, Guna – guru, ruksha, virya – sheet, vipak – katu

Karma –kaph pitta hara, mutra sangrahaniya, varnya, sthambhana.

Therapeutics Uses-

i) Its bark powder has *mutra sangrahaniya* properties therefore it is used in *prameha* and *madhumeha*.

Dosage - powder – 3-6 gm., latex – 5 -10 drops.

Modern Researches –

A water extract of bark of *Ficus bengalensis* (FB) plant has been shown to possess a hypoglycemic effect by different groups of workers (16-18).

The water extract of FB bark has been reported to possess hypocholesterolaemic and hypolipidaemic effects (19).

The antioxidant activity of aqueous extract of FB has been reported in hypercholesterolaemic rabbits (20).

Three ketones were isolated from the stem bark of FB, they are 20-tetratriacontene- 2-one, 6-heptatriacontene-10-one, pentatriacontan-5-one and two other compounds, beta-sitosterol-alpha-D-glucose and meso-inositol have also been isolated (21).

A dimethoxy derivative of leucocynidin, 3-O-beta-D-galactosyl cellobioside was also isolated and its antidiabetic activity has been demonstrated (22).

A glycoside of leucopelargonidin was also isolated from the bark of *Ficus bengalensis* and its antidiabetic effects have been reported (23)

E) **Kapeetana (*Albizzia lebbek Benth.*)-**

Properties -

Rasa – kashay , Guna – laghu, ruksha, virya – sheet, vipak – katu

Therapeutics Uses-

i) Its bark has *mutra sangrahaniya* properties therefore it is used in *prameha* and *madhumeha*.

Dosage - powder – 3-6 gm., decoction – 50 – 100 ml.

F) **Udumbara (*Ficus racemosa Linn.*)-**

Properties -

Rasa – kashay , Guna – guru, ruksha , virya – sheet , vipak – katu

Karma – switra, vatarakta, vrana, rakta vikara, murcha, atisara etc.

Therapeutics Uses-

i) Its bark has *mutra sangrahaniya* properties therefore its decoction is used in *prameha* and *madhumeha*.

Dosage - powder – 3-6 gm. , decoction – 50 – 100 ml. , latex- 5 – 10 drops.

Modern Researches –

Methanolic extract of the stem bark in dose of 200 and 400 mg/kg p.o. lowered the glucose level in normal and alloxan-induced diabetic rats. The activity was also comparable to that of the effect produced by a standard antidiabetic agent, glibenclamide (10 mg/kg) proving its folklore claim as antidiabetic agent [24-26]

G) **Ashvattha (*Ficus religiosa Linn.*) –**

Properties -

Rasa – kashay, madhur , Guna – ruksha ,guru, virya – sheet , vipak – katu

Karma – kaph pitta hara, mutra sangrahaniya, vran shodhan.

Therapeutics Uses-

i) Due to *mutra sangrahaniya* properties its bark and fruit it is used in *prameha*.

Dosage - decoction -50 -100 ml., powder 3-6 gm.

Modern Researches –

-Sitosterol-D-glycoside was isolated from the root bark of *F. glomerata* and *F. religiosa*, which has a peroral hypoglycemic activity.[27] Oral administration of *F. religiosa* bark extract at the doses of 25, 50, and 100mg/kg was studied in normal, glucose-loaded, and STZ (streptozotocin) diabetic rats. The three doses of bark extract produced significant reduction in blood glucose levels in all the models. The effect was more pronounced in 50 and 10mg/kg than 25mg/kg. *F. religiosa* also showed significant increase in serum insulin, body weight, and glycogen content in liver and skeletal muscle of STZ-induced diabetic rats, while there was significant reduction in the levels of serum triglyceride and total cholesterol. *F. religiosa* also showed significant antilipid peroxidative effect

in the pancreas of STZ-induced diabetic rats. The results indicate that aqueous extract of *F. religiosa* bark possesses significant antidiabetic activity.[28]

H) Bhallataka (Semecarpus anacardium Linn.)-

Properties -

Rasa – katu, tikta, kashay, Guna – laghu, tikshna, snigdha, virya – ushna, vipak – madhura

Karma – kaph pitta hara, medhya, vrsya, dipana, bhedana.

Therapeutics Uses-

i) Due to katu, kashay rasa and ushna tikshna guna bhallatak helps to absorb excess kled from body.

ii) Due to its mutra sangrahaniya properties it is used in kaphaj premaha and santarpanjanya prameha.

Dosage - paste of seed kernel 3-6 gm, oil 10-20 drops.

Modern Researches –

Arul *et al.* studied the effect of ethanolic extract of dried nuts of SA on blood glucose and investigated in both normal (hypoglycemic) and streptozotocin-induced diabetic (antihyperglycemic) rats. The ethanolic extract of SA (100 mg/kg) reduced the blood glucose of normal rats. The blood glucose levels were measured at 0, 1, 2 and 3 h after the treatment and antihyperglycemic activity of SA was compared with tolbutamide, a sulfonyl urea derivative used in diabetes mellitus.[29]

Krishnamurthy *et al.* developed Kalpaamrutha (KA), a modified Siddha preparation, which contains SA Linn., EO and honey, and studied for the variations in lipids, lipid-metabolizing enzymes and lipoproteins in cancerous animals and the effect of KA on the lipid metabolism. The increased levels of total cholesterol, free cholesterol, phospholipids, triglycerides and free fatty acids and decreased levels of ester cholesterol in plasma, liver and kidney found in cancer-suffering animals were reverted back to near

normal levels on treatment with KA and SA. The effects of KA were found to be more effective than SA.[30]

I) Ashmantaka (Ficus rumphii Blume.)-

Properties -

Rasa – kashay, Guna – ruksha, laghu, virya – sheet, vipak – katu

Karma – kaph pitta hara, mutra sangrahaniya, latex (vamaka).

Therapeutics Uses-

i) Sushruta quoted the utility of ashmantaka fruit in prameha chikitsa.

Dosage - bark decoction -50 -100 ml., latex 10-20 drops..

Due to its mutrasangrahaniyaguna ashmantaka has antidiabetic properties. [31]

J) Somavalka (Acacia catechu Willd.) -

Properties -

Rasa – kashay, tikta, Guna – ruksha, laghu, virya – sheet, vipak – katu

Karma – kaph pitta hara, mutra sangrahaniya, vran shodhan.

Therapeutics Uses-

i) Due to kashay rasa it has mutra sangrahaniya properties so it is used in prameha.

Dosage - Decoction -50 -100 ml., Powder 3-6 gm.

Modern Researches –

Hypoglycemic activity in eastern traditional medicine Acacia catechu Willd is extensively used in management of diabetes in combinations with other medicinal plants. The most common chemical classes among these plants are flavonoid and other anti-oxidant principles. Polar as well as non-polar components of Acacia catechu Willd shows hypoglycemic activity. Comparative studies show that water insoluble fraction of ethanolic extract of Acacia catechu Willd is more effective than the ethanolic extract and the activity is comparable to that of the standard, glibenclamide (5 mg/kg). In an experiment, Ethyl acetate extract of Acacia catechu Willd at a concentration of 500mg/kg/day used for 7 days, significantly decreases blood glucose level

of normal as well as alloxan induced diabetic albino rats but it was not effective as that of standard drug (Glibenclamide) as it is shown by following results. Ray, D., Sharatchandra, K, and Thokchom, I. (2006). [32]

DISCUSSION

Onanalysis of different research article it can be said that the drugs present in the *mutra sangrahaniya mahakashaya* of *Charaka Samhita* were reviewed on scientific lines for their *mutra sangrahaniya* properties. Various published work revealed that all of the drugs mentioned in *mutra sangrahaniya gana* i.e,

- a) Jambu (*Syzygiumcumini* Skeels),
- b) *Amra*– *Mangifera indica*,
- c) *Plaksha* (*Ficus lacor* Buch-Ham.),
- d) *Vata* (*Ficus bengalensis* Linn.),
- e) *Kapeetana* (*Albizia lebeck* Benth.),
- f) *Udumbara* (*Ficus racemosa* Linn.)
- g) *Ashvattha* (*Ficus religiosa* Linn.),
- h) *Bhallataka* (*Semecarpus anacardium* Linn.),
- i) *Ashmantaka* (*Ficus rumphi* and
- j) *Somavalka* (*Acacia catechu* Willd.) has anti-diabetic action due to its anti diuretic properties (*Mutra sangrahaniya guna*). This property could be due to its *kashaya rasa* and *sheet virya* which absorbs the excess *kled* from our body and helps to restore normal quantity of urine.

CONCLUSION

Mutra sangrahaniya Mahakashaya is one of the important *mahakashaya* of *Charak samhita*. The ten drugs are described in this *mahakasaya*, the main purpose of these drugs is to restore normal quantity of urine (anti-diuretics). Most of the drug present in *mutrasangrahaniya mahakashaya* has *kashaya ras* and *sheet virya*, due to this it absorbs the excess *kled* from our body and helps to restore normal quantity of urine (anti-diuretics). Due to this property these drugs have antidiabetic effectas the mainlakshan of *prahema* is *prabhutavil mutrata*.

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