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

Partha Mondal¹, Surekha Landge²

¹M.D Scholar, ²Guide and H.O.D,
Dravyaguna vigyan Dept., Shri Ayurveda Mahavidyalaya, Nagpur, Maharashtra, India

Email: dr.partha.ayu.1258@gmail.com

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 management 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-aphathy) 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 SangrahaniyaMahakashayagan drugs** – Drug which helps to restore normal quantity of urine – (anti-diuretics) [2]

- a) Jambu (Syzygium cumini (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) Bhallatak (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 -
*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], Sigogneu-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), hrdya, grahi.

**Therapeutics Uses**-

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

**Dosage** - Decoction -50 -100 ml.

**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** -
*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** -
*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 lebbeck Benth.) -
Properties -
Rasa – kashay, madhur, Guna – ruksha ,guru, virya – sheet, vipak – katu

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 –
β-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) Bhallatak (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 Kalpaamruthaa (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**
  - *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**

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

**Dosage**
- Decocton -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 show 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
On analysis 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 (Syzygium cumini Skeels),
b) Amra– Mangifera indica,
c) Plaksha (Ficus lacor Buch-Ham.),
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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 antidiabetic action due to its anti diuretic properties (Mutra sangrahaniya guna). This property could be due to its kashay 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 main lakshan of prahema is prabhutavil mutrata.
stry and Pharmacology of Natural Products, Rio de Janeiro Brazil.


