

A Review on Madhumeha (Diabetes Mellitus) through Caraka Samhita in India

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Abstract: Diabetes is undoubtedly one of the most challenging health problems in the 21st century. This disease is now increasing day to day in India. It is of many types and has many symptoms. It is a chronic disorder of carbohydrate, fat and protein metabolism. According to the Ayurveda, a healthy lifestyle and food habit can prevent the disease. It is surprising that thousand years ago they had given the way out to prevent the disease. In *caraka* and *Susruta Samhita* this disease is named as *prameha*. Different types of *prameha*, their symptoms, their causes and effects on the body have been discussed. In Ayurveda all medicines are derived from medicinal plants. The taste of the herb is the key of working i.e. the taste will give the idea that the herb is useful for what kind of disease. A major portion of medicinal plants of the World are found in India. Some medicinal herbs which are found to have anti-diabetic agents have been tabulated with their anti-diabetic effects.

Keywords: Ayurveda, Diabetes, Medicinal Herbs, India, Caraka, Sushruta, *Prameha*.

Introduction:

Nowadays diabetes is becoming a disease of worry for millions of people's health and spreading like an epidemic for our unhealthy lifestyle. This disease is the chronic, endocrine disorder of carbohydrate, fat and protein metabolism. The symptoms of this disease are excessive thirst, hunger, weight loss, obesity, blurred vision etc. This following data reveals that diabetes is becoming an epidemic with time in India:

Year	No. of diabetic people in India(in million)
1985	18.6
1995	19.4
2000	31.7
2006	40.9
2012	~63
2014	66.8
2021	~74
2025	~101

Ayurveda provides the solution to this so-called lifestyle disease. Ayurveda is a Sanskrit term, made up of two words, 'ayu' and 'veda'. 'Ayu' means life and 'veda' means knowledge (विद् means knowledge). So, 'Ayurveda' means knowledge of life. According to Susruta "ayur asmin vidyate anena va ayur vindatyayur ayurveda" (Susruta Samhita. 1.14). Ayurveda is considered as a part of the *Atharva-veda* (one of the four Veda). It is one of the most ancient and comprehensive medical sciences of the World. Ayurveda is the science for our body, sense organs, mind and spirit. It is a Consciousness-based approach to health that begins harmony and balance in all areas of our life. It is based upon the laws of nature. The relationship between the human being and the Universe is intrinsic and cannot be separated. It believes that the Universe is made up of five elements: air, fire, water, earth and ether. These elements are the building blocks for the Universe as well as for the human body. These five elements originate from three *dosas* or energies: *vata*, *pitta* and *kapha*. Every man has a unique constitution that depends on the right balance of these three *dosas*. Ayurveda suggests specific lifestyle and dietary changes to help individuals in balancing the *doshas*.

Taste(rasa)	Predominant elements
Sweet(<i>madhura</i>)	Water + Earth
Sour(<i>amla</i>)	Water + Fire
Salty (<i>lavana</i>)	Earth + Fire
Pungent(<i>katu</i>)	Air + Fire
Bitter(<i>tikta</i>)	Air + Earth
Astringent(<i>kasaya</i>)	Air + Earth

Ayurveda recognizes six main *rasas* (tastes) which are also the combination of five elements (*Panchabhutas*). These are as follows—

Among these six *rasas*, three (Sweet, astringent and bitter) are having cooling effect and other three (salty, sour and pungent) having heating effect. Herbs having a heating effect decrease *kaphaja dosa* and increase *pitta dosa* whereas the herbs with cooling effect decrease *pitta dosha* and increase *kaphaja dosa*.

In the text of Ayurveda, diabetes is known as *madhumeha* (*madhu* means honey and *meha* means urine). In the *Caraka* and *Susruta Samhita* this disease is familiar as *prameha* ; excessive urine(*pra* means excessive) In this report, we are discussing the disease, its origin, classification, symptoms, effects and the management by the use of Ayurveda in ancient India. Lists of some medicinal herbs having anti diabetic agents have been reported here.

History of Ayurveda:

Ayurveda has existed from pre-historic time in Indus valley civilization/ India. It developed in ancient India during the Vedic period. In the tradition of Indian Ayurveda, at first the knowledge of Ayurveda was transmitted from Gods to Sages like Bharadvaja, Atreya, Agnivesha, Harita, Bhela, Dhanvantari etc. Some Scholars believe that Atreya was the teacher of therapeutics (*Kayacikitsa*), one part of the Ayurveda-shastra. Agnivesha, the disciple of Atreya, was the author of *Agnivesa-tantra*. In a later period when the *Agnivesh-tantra* was extinct then Acarya Caraka edited that book by the name *Caraka Samhita*. In the same tradition *Susruta-samhita* was named after *Acarya Susruta*. Again Dhanvantari received the knowledge from God Indra. Susruta was the twelfth disciple of Dhanvantari. After that, Acarya Nagarjuna edited the *Susruta-samhita*. The first text of Ayurveda is *Caraka Samhita*, dated at about the First century A.D. and that of *Susruta-Samhita*, dealing with surgery is around the fifth-sixth century A.D. Another important text of Ayurveda is *Astanga Hridayam* of Vaghbata.

Classification and Diagnosis of Diabetes:

Caraka had classified the *prameha* (diabetes), primarily based on the sweetness of urine which was identified by a swarm of flies and ants over the urine. In the modern age, Ayurvedic physicians currently use urine, blood sugar and glycol-hemoglobin (HbA1C) levels to confirm the diagnosis. From *Caraka Samhita* we came to know that there are twenty types of *prameha* (diabetes), among these ten are *kaphaja prameha*, six are *pittaja prameha* and four are *vataja prameha*. (*Caraka Samhita, Cikitsasthana, 6.7 and 8¹*). On the other hand there are also two types of diabetes such as- one dependent with heredity and other independent. The second type of *prameha* is curable and maintainable. The twenty types of *pramehas* are as follows:

Kaphaja pramehas²:

SI No	Names	Characteristics of urine
1.	<i>Udaka meha</i>	When the urine is clear; is in large amounts; is white, cold and odorless, resembles water, sometimes with slight turbidity and slimy.
2.	<i>Iksu meha</i>	When the urine is like sugar cane juice and is very sweet.
3.	<i>Sandra meha</i>	When the urine becomes thick when kept overnight.
4.	<i>Sandra Prasad/Sura meha</i>	When the urine resembles bear(<i>sura</i>) with a clear top and a cloudy bottom portion
5.	<i>Sukla meha</i>	When the urine is white and thick, similar to a solution of cornflower
6.	<i>Sukra meha</i>	When the urine is like semen or mixed with semen
7.	<i>Sita meha</i>	When the urine is sweet and very cold.
8.	<i>Sikata meha</i>	When the urine contains sand-like particles.
9.	<i>Sanair meha</i>	When the urine is passed slowly with pain.
10.	<i>Laala meha</i>	When the urine is slimy and contains threads like that of saliva.

Pittaja Prameha³:

Sl No	Name	Characteristics of urine
1.	<i>Ksara meha</i>	When urine is like a solution of alkali in smell, colour and taste.
2.	<i>Kala meha</i>	When the colour of urine is black
3.	<i>Nila meha</i>	When the colour of urine is blue.
4.	<i>Haridra meha</i>	When the colour of urine is yellow like turmeric.
5.	<i>Manjistha meha</i>	When the colour of urine is red like manjistha.
6.	<i>Rakta meha</i>	When the colour of urine is deep red.

Vataja pramehas⁴: According to Caraka, the cause of *vataja prameha* is when the some *dhatus* are diminished the patient passes urine of four types, such as:

Sl. No.	Name	Characteristics of urine
1.	<i>Majja meha</i>	The urine looks like marrow or marrow mixed
2.	<i>Ojas meha</i>	The urine looks like honey
3.	<i>Bosa meha</i>	The urine looks like liquid muscle fat, and may be passed frequently.
4.	<i>Hasti meha</i>	The urine is like that of an elephant in rut, being discharged continuously without force, mixed with lymph and without obstruction.

These characteristics of urine may be found in a wide range of pathologies covering all kinds of urinary infections, obstructive uropathies, renal failures and other health conditions. The *Iksu meha*, in the group of *Kaphaja pramehas* and *Ojas meha* in the group of *Vataja pramehas* are correlated with modern understanding of diabetes. The results of diagnosis are also correlated with body constitution in order to design and individualized therapy.

Symptoms:

The premonitory symptoms of *prameha* are – sweating, foul smell in body, slackness in body, liking for comfort in lying, sitting and sleeping, smearing in heart, eyes, tongue and ears, heaviness in body parts (overweight), excessive increase in hairs and nails, dryness in throat and palate, sweetness in mouth, burning sensation in hands and feet etc. Apart from these, ants also rush towards the urine of those persons⁵

Causes of Prameha:

It has been narrated in *ayurveda* that the long periods of physical inactivity, laziness, sleeping for long hours, over eating of meat soup of the domestic, aquatic and marshy animals and milk are etiological factors for *prameha*. (*Caraka Samhita, Cikitsasthana, 6.4*).

Kapha causes *prameha* by affecting *meda* (lipid metabolism), muscles and body fluid situated in the urinary bladder. *Pitta*, aggravated by hot things, causes the same by affecting the above entities. *Vayu*, on the relative diminution of other two *dosas*, draws on the *dhatus* in the urinary bladder and thus causes *pramehas*. *Dosas* produces respective types of *prameha* by reaching the urinary bladder and affecting the urine. (*Caraka Samhita, Cikitsasthana*, 6.5)

Management of Diabetes:

Therapy (Cikitsa): The management of diabetes is carried out with appropriate palliative herbal therapy. The herbs are selected based on their properties, such as *rasa* (taste), *guna* (physico chemical properties), *virya* (potency), *vipaka* (post digestive effect) and *prabhava* (unique action), that are necessary to bring about balance of *dosas*. Generally individual herbs are not used in Ayurvedic therapies. As therapies are based on a predominant *dosas* and body constitution, they always include formulas containing many herbs and sometimes various minerals. *Caraka Samhita* has prescribed the following palliative treatments specific for *dosa* constitution. Ten water decoctions for *kapha*, ten decoctions for *pitta* and one decoction for *vata* in which seventeen herbs are collectively cooked.

The patient of *prameha* should take decoction of *daru haridra*, *dvodaru*, *trifola* and *musta* or should take the powder of *haridra* mixed with honey along with the juice of *amlaki* fruits. The following ten decoctions added with honey are prescribed for *kaphaja prameha* such as—

1. *Haritaki, kath phala, musta and lodhra*
2. *Patha vidanga, arjuna and dhanvana*
3. *Both haridras (haridra and daruharidra), tagara and vidanga*
4. *Kadamba, shala, arjuna and yavani*
5. *Daruharidra, vidanga, khadira and dhava*
6. *Devadaru, kustha, aguru and chandana*
7. *Daruharidra, agnimantha, triphala and patha*
8. *Patha, murva and goksura*
9. *Yavani, usira, haritaki and guduci*
Cavya, haritaki, citraka and saptaparna

Likewise, in *pittaja* types the following ten decoctions added with honey are prescribed such as—

1. *Usira, lodhra, arjuna and chandana*
2. *Usira, musta, amlaki and abhaya*
3. *Patala, nimba, amlaki and guduci*
4. *Musta, haritaki, padmaka and kutaja*
5. *Lodhra, hribera, kaliyaka and dhataki*
6. *Nimba, arjuna, ambrataka, haridra and utpala*
7. *Sirisa, arjuna, nagakesara*
8. *Priyangu, kamala, utpala and palasa flower*

9. *Asvattha, patha, asana and vetasa*
10. *Daruharidra, utpala and mustaka*

The above formulations of decoction are useful in all types of *prameha*, they all may be used in the form of *mantha*, saturated with barley, food, drinks or alone.

In *vataja prameha*, oils and *ghritas* cooked with the decoctions should be given. Here the drugs of decoctions diminished fats and *kapha* and on the other hand function pacifies *vayu*.

Prescribed diet for diabetic person: According to *Caraka samhita*, the person with *prameha*(diabetes) who is not fit for evacuation should be subjected to pacificatory management for alleviation of the disease such as *mantha*(churned drink), extracts, barley powder and light edibles. He should eat rough food articles such as, boiled barley, barley cakes, flour of roasted grains and *apupa*(a dietary preparation) with palatable meat soup of wild birds particularly gallinaceous and peckers. He should take old *sali* rice with soup of *mudga* etc and bitter vegetables added with oil of *danti* and *ingudi* or mustard and linseed. The diet of the patient of *prameha* should consist mainly of barley. One suffering from *kaphaja prameha* should eat various preparations of barley added with honey, barley grain deeped in decoction of *triphala* for the whole night, preparing a saturated food taken with honey. The patient may also take them regularly, mixing with vinegar for alleviation of *prameha*. For non-vegetarians, various preparations of barley mixed with the meat of ass, horse, bull, swan and spotted deer should be prescribed. Wheat may also be used in forms similar to those of barley. *Pramehas* can be prevented if one takes parched barley and dry grain flour regularly. According to *Caraka* there are two types of diabetic patients, one type of patient is obese and strong while the other one is lean and weak. He also added that *Pramehas* can be cured quickly by various physical exercise including *yogasana*⁶.

Medicinal Herbs: *Caraka* taught and in accordance with Buddha's physician there is no substance in the World that has no medical value, if you know how to use it. The World Health Organization (WHO) has listed ~ 21,000 plants with medicinal value. Among these ~2500 plants are from India³. So, we can say that India is the largest producer of medicinal plants. In *Susruta-samhita*, about 700 medicinal plants have been recorded. Majority of medicines used in Ayurveda are of plant origin.

In this report we are concentrating on the healing of diabetes by medicinal plants. The medicinal herbs which are useful for the management of diabetes and also found in India are as follows: *neem*, aloe vera, onion, garlic, fenugreek, holy plant, Indian gooseberry, bitter melon, ginger, turmeric etc.

The properties of herbs are related to their taste, it is not an incidental fact in accordance with Ayurveda. The energetic effect i.e. heating or cooling effect is directly related to the properties of herbs. In Ayurveda there are

many methods of herbal preparation, such as *Savarsa*(fruit juice), *kalka* (herbal paste), *kvatha*(decoction),*phanta*(hot infusion),*hima*(cold infusion) etc.

In this report, we are discussing the following medicinal herbs, their description and use as anti-diabetic agents.

Herbs	Scientific Name	Medicinal Use
Ginger	<i>Zingiber officinale</i>	It has a hypoglycemic effect.
Garlic	<i>Allium sativum</i>	It has a significant hypoglycemic effect.
Aloe Vera	<i>Aloe barbadensis</i>	The inflammatory effect of this plant is the second explanation of anti-diabetic effect.
Turmeric	<i>Curcuma longa</i>	It has a hypoglycemic effect.
Onion	<i>Allium cepa</i>	It has an anti-hyperglycemic effect.
Bitter gourd	<i>Momordica charantia</i>	It contains many active diabetic agents. It is useful for type-2 diabetes.
Neem	<i>Azadirachta indica</i>	It has a significant effect on decreasing the blood sugar level.
Holy basil	<i>Ocium sanctum</i>	Both hypoglycemic effect and anti-hyperglycemic effect.
Fenugreek	<i>Trigonella foenum)</i>	It improves glucose metabolism.
Indian gooseberry	<i>Eugenia jambolana</i>	It has an anti-hyperglycemic effect.
Agaru	<i>Aquilaria malaccensis</i>	It has anti-inflammatory, analgesic, and antimicrobial properties.
Amlaki	<i>Phyllanthus emblica</i>	It has rich vitamin C content and antioxidant properties.
Arjuna	<i>Termilania arjuna</i>	It is widely used for treatment of cardiovascular diseases.
Devadaru	<i>Cedrus deodara</i>	Deodar oil is used in arthritis, headache etc.
Guduchi	<i>Tinospora cordifolia</i>	It is used for boosting immunity, managing diabetes.
Tagar	<i>Tabernaemontana divaricata</i>	It is used to treat fever and reduce inflammation.
Utpala	<i>Nymphaea nouchali</i>	It is used for treating diabetes, liver issues, inflammation, UTIs, and digestive problems.
Sirish	<i>Albizia lebbeck</i>	It is widely used to neutralize toxins in the body.
Priyangu	<i>Callicarpa macrophylla</i>	It is used for the treatment of headache, diarrhea mixed with blood.
Yavani (Ajwain)	<i>Trachyspermum ammi</i>	It is used for gastrointestinal troubles, and loss of appetite.
Chavya	<i>Piper Retrofractum</i>	It is used for indigestion, abdominal colic, and poisoning.
Daruharidra	<i>Cocinium fenestratum</i>	It is used in dressing wounds, treating ulcers and used as stomachic and antiseptic
Kadamba	<i>Neolamarckia cadamba</i>	It is used for fever, wounds, diarrhea, diabetes, and skin issues.
Kustha	<i>Saussurea lappa</i>	It is used for skin diseases, bronchial asthma, diarrhoea, haemorrhages.

Nimba	<i>Azadirachta indica</i>	It has anti-inflammatory, antiarthritic, antipyretic, hypoglycemic, antigastric ulcer, antifungal properties.
Patola	<i>Trichosanthes dioica</i>	It is used in loss of appetite, anorexia, excessive thirst, jaundice and other liver disorders, acid reflux disorders.
Shal	<i>Shorea robusta</i>	It is used in treating non healing wounds, diabetes, boils, deafness etc.
Katphal	<i>Myrica esculenta</i>	It is used for the treatment of swelling, intestinal worm, paralysis, joint pain, oral ulcer etc.
Chandan	<i>Santalum ovatum</i>	It is used as an antiseptic and astringent, and for the treatment of headache, stomachache, and urinary and genital disorders.
Kamal	<i>Nelumbo nucifera</i>	It is used for pitta balance, skin health, mental relaxation, heart health, and blood purification.
Nagkeshara	<i>Mesua ferrea</i>	It is used in treating fever, vomiting, urinary tract disorders, migraine etc.
Agnimantha (Arani)	<i>Premna serratifolia</i>	It is useful in the treatment of cardiovascular diseases, skin diseases, inflammatory diseases, arthritis etc.
Murba	<i>Phyllanthus emblica</i>	It is used for aiding digestion and boosting immunity.
Palash	<i>Butea monosperma</i>	It is used to treat various ailments, including skin disorders, pain, and inflammation.
Lodhra	<i>Symplocos racemosa</i>	It is mainly used in bleeding disorders, diarrhea and eye disorders.
Kumkum	<i>Bixa orellana</i>	It is used for the treatment of acne, black head, diarrhea, skin diseases etc.
Saptaparna	<i>Alstonia scholaris</i>	It acts as a blood purifier and cardio tonic.
Dhanwan	<i>Grewia tiliaceifolia Vahl</i>	It is used to treat rheumatoid arthritis, osteoarthritis, neck pain and back ache due to spondylosis etc.
Murva	<i>Marsdenia tenacissima</i>	It is used in treating diseases due to impure blood, skin diseases, jaundice and fever.
Usira	<i>Vetiveria zizanoides</i>	It is used for its cooling, calming, and blood-purifying properties.
Vidanga	<i>Embelia ribes</i>	It is useful against vomiting, bloating, indigestion, gastritis and constipation. It is widely used in weight loss treatment.

Conclusion:

From the above report, we can conclude that diabetes had been found in India thousands years ago. It was familiar as *prameha* then. There are many types of *pramehas* and their symptoms along with management of them by lifestyle and food habits in accordance with *Caraka* and *Susruta* Samhita. Among all the diabetes, which is heredity dependent is not curable but it can be controlled by changing food habits, lifestyle and with the practice of daily *yogasana*. From this study we also came to know the lifestyle

and food habits of people of that time in India.

Endnotes

1. cf. *Astanga Samgraha, Nidanasthana*, 10
2. *Caraka Samhita, Cikitsasthana*, 6.9
3. *Caraka Samhita, Cikitsasthana*, 6.10
4. *Caraka Samhita, Cikitsasthana*, 6.11
5. *Caraka Samhita, Cikitsasthana*, 6.12-14.
6. *Caraka Samhita, Cikitsasthana*, 6.50

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