

Management of *Madhumeha* (Diabetes mellitus) with current evidence and intervention with *Ayurvedic Rasausadhies*

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Rasausadhies or organo-metallic formulations have been use in the treatment of Diabetes mellitus with its excellence for centuries but their scientific evaluation has not thoroughly constituted with modern tools. *Rasausadhies* are popularly use since the period of great alchemist Nagarjuna, i.e. 8th century AD. In fact, it is explored that strategies and treatment modalities to control diabetes exists in *Rasashastra*, a discipline of Ayurveda. In this time, invention of special processing techniques as *sodhan* (purification and detoxification), *marana* (incineration), etc. have been established which are being use to convert the minerals and metals into easily consumable form and immediate showing the desirable effect. *Madhumeha* (Diabetes mellitus) is a multi-factorial disease resulting from a gene environment interaction. Projection of disease prevalence and incidence rate in worldwide by World Health Organization indicating the danger and graveness of this disease. In the present study, the initiation have been taken to collect and compiled all the related information about *Madhumeha* with current evidence regarding *Rasausadhies* used therapeutically that may facilitate further research work.

Keywords: *Rasausadhies*, *Madhumeha*, Diabetes mellitus

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Ayurveda is the science of life. This holistic ancient science has two objects, viz. to maintain the health of healthy person, and to treat the sick person. The entire *Ayurveda* is frame on *Trisutras- Hetu, Linga, Ausadha* (3 principles- etiology, symptomatology and medicament). *Ausadha* is the most important among them. Plants, animals and minerals, these three are the main sources of *Ayurvedic* drugs.

Earlier, herbs were extensively use due to their easy availability and processing techniques. However, later on, the therapeutic values of minerals and metals were also identifies and they occupied an important place in *Ayurvedic* therapeutics. The therapeutic use of minerals and metals can be seen from the *Samhita* period but very much limited. They were mainly used in the form of purified and *ayaskriti* (metallic powder form). However, in the medieval period, minerals and metals are popularly used due to the invention of various special processing techniques like *Sodhana* (purification), *Marana* (incineration), *Samaskara* (which increases the potency), *Murchhana* (trituration up to fine disintegration), etc. to convert the minerals

and metals into non-toxic, colloidal state, easily administrable, absorbable and assimilable forms.

The term *madhu* and *meha* are indicating the idea of sweet substance similar to honey in reset of taste, odor, and color not in concentration, which is secrete profusely through the urinary system. *Madhudhatu*, *Madhuprameha*, *Ojameha*, *Kshaudrameha* is the synonyms mentioned in Ayurveda. Twenty types of *Prameha* if ignored and not treated properly in time can convert into *Madhumeha* and become incurable. In some occasions, this disease is applying to the all kinds of *Prameha*.

Nidan (Etiology): The general etiological factors of *Madhumeha* are:

Addiction to the pleaser, laughing, unwholesome sleep, sedentary habit, lying down

posture, lack of exercise, continue cheerfulness, and excessive mental and physical works^{1,2}.

Purvarupa (Paranormal symptoms): Ancient scholars have given a description about the *purvarupa* or prodormal sign and symptoms of *Madhumeha*. It is not available in modern Science, likewise: Knotted hair, burning sensation, numbness in the hands and

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feet, sweetness in the mouth, thirst increases, feeling of tiredness and laziness, excess urination, increase sweating, flies are attracted to urine, more sleep, and body odor becomes raw flesh like^{1,2,3}.

By getting any of these signs and symptoms, one should become doubtful about his/ her disease and becomes conscious about the routine path.

Bheda (Classification): *Prameha* patients are of two types:

- (i) *Sthula pramehi* – means patients are obese.
- (ii) *Krisha pramehi* – means patients are emaciated³.

Madhumeha roga is originated during gestational period that means defect in *sukra-sonita* (sperm-ovum) that is called *bija dosa* (genetically defect) narrated by *Acharya Charaka* and this type of *Prameha* is also called *Sahaja Prameha* (Juvenile Diabetes)¹.

Samprapti and Lakshana (Pathogenesis and signs-symptom): *Madhumeha* is incurable and caused by aggravation of *vata*. Naturally, *ojas* is of sweet taste. Due to the roughness, *vata* converts it into that of astringent taste and takes it into the urinary bladder; this causes *madhumeha* (Diabetes mellitus)¹. Patients pass urine, sweet and astringent taste, pale in color and unctuous³.

Madhumeha roga is arising by two ways:

1. Aggravation of *vata*, due to *dhatukshya* (body constitution)
2. Obstruction to the *srotos* (channels)

Etiological factors aggravate, *kapha dosha* and *medo dhatu*, which leads to obstruct the channels and increases the *vata*, finally manifest the *Madhumeha*. On the other hand, mental stress and strain, food, drinks and activities that increase the *vata* and *dhatu kshya* causes aggravation of *vata* and leads to *Madhumeha*. These types of patients are generally emaciated³.

Upadravas (Complications): *Udavarta* (upward movement of wind), tremors, catching pain in the region of the heart, different kinds of desires, pain in the abdomen, loss of sleep, dryness of the mouth, throat, etc. cough and dyspnoea are the complications of *Madhumeha*³.

Ulcers or eruptions appear on the joints, vital spots and muscular parts during the course of diabetes. These are *Saravika* (having elevated edges and depressed center, black in color, associated with exudation and pain, resembling a saucer in size and

shape), *Kacchapika* (having severe pain, either continuous or intermittent, extends over a large area, smooth and resembles the shell of a tortoise), *Jalini* (is stable, has venous network, greasy exudates, and big cavity inside, with severe pain, intermittent pain and has minute opening), *Vinata* (is big sized eruption, developing on either the back or abdomen, blue in color, severe pain and exudation and bent downwards), *Alaji* (has burning sensation and elevation of the skin, very difficult to bear, spreads to other places, reddish-black in color and accompanied with severe thirst, burning sensation all over the body, delusion and fever), *Sarsapi* (ulcerates soon, having severe pain and surrounded by eruptions resembling mustard seeds) and *Vidhradi* (abscess)^{1,2,3}.

Diabetes mellitus

In modern science, *Madhumeha* is co-relating with Diabetes mellitus and is one of the cardinal problems in the medical profession because it cannot be cured but some extent controlled. Diabetes mellitus is a clinical syndrome characterized by hyperglycemia due to absolute or relative deficiency of insulin.

WHO estimated that diabetics are 19.4, 16.01, 13.9 millions in India, China, USA in 1995 AD and these increase 57.2, 37.6, 21.9 millions respectively in 2025 AD and the global prevalence of type II diabetes will be more than double from 135 million in 1995 to 300 million 2025. Presently it is estimated to affect about 150 – 200 million people Worldwide⁴.

There is a wide urban and rural difference in the prevalence of type II diabetes; the prevalence is 2.4% in rural and 11.6% in the urban population. In recent time, high prevalence of impaired glucose tolerance was also reported in urban population. WHO estimates that India will have 79.9 million diabetics by 2030. A quarter of the income is devoted to diabetic care for a low-income Indian family that WHO said. Every fifth adult of the world is an Indian, for which India is considered as the Diabetic capital by International Diabetic Federation⁵.

Incidence rate in India: Hyderabad-20.7 %; Chennai-18.6%; Bangalore-17.8 %; most metros and cities-15-20 %; Delhi 21 lacs cases in which 5300 children by National Urban Diabetic Survey, 2005⁴.

Diabetes mellitus is of two types:

- (1) Type I – Insulin dependent diabetes mellitus (IDDM) or juvenile Diabetes mellitus. It is known as *Jata pramehi*, *Sahaja pramehi*, which is not curable.

- (2) Type II– Non-insulin depended diabetics mellitus (NIDDM) or adult onset Diabetes mellitus. It is know as *Sthula pramehi* by *Charaka* and *Apathya Nimittaja pramehi* by *Susruta*, which is curable.

Others are gestational Diabetes mellitus and secondary Diabetes mellitus.

Etiology: Living an inactive sedentary life within the surrounding of automobiles, computers, and consumption a high calorific diet, in which contributes obesity lead to Type-II Diabetes mellitus. Now, obesity is considering as law full wife of Diabetes mellitus. Therefore, where there is obesity, there must be a chance of DM.

Pathogenesis: The development of type II Diabetes is a gradual process; it occurs that because of insulin resistance in skeletal muscle where insulin mediated glucose uptake is reducing. This is compensating by increased insulin secretion from the Beta cells. However, if the Beta cells are unable to compensate for the resistance, impaired glucose tolerance (IGT) develops with further deterioration of Beta cells and progression to become NIDDM. NIDDM is a relative insulin deficiency and failure of peripheral utilization of glucose. Obesity is one of the important etiological factors for type II Diabetes mellitus, which causes some degree of insulin resistance. The prevalence of NIDDM and IGT in the urban and rural areas in southern India was report. The findings have suggested that 8.2% in the urban and 2.4% in the rural age adjusted general population are suffering from NIDDM. The age adjust prevalence of IGT was 8.7% and 7.8%, respectively in urban men and women, and 2.6% and 1.6% in rural men and women. This indicates that the prevalence of IGT and NIDDM is high in urban population.

Clinical features: Onset is usually gradual but rarely there may be acute onset. There may be no symptom or sign and disease may be diagnosis during routine investigation or examination. The classical features of diabetics may see as follows:

Polyuria, polydipsia, polyphagia, rapid emaciation (dominant feature in case of IDDM), dryness of mouth and throat, constipation, and instance itching.

Diagnosis: Normally fasting blood sugar level varies from 80 – 120 mg percentage. If the level is higher than 120mg percentage the existence of diabetic is almost sure. On the other hand, post parandial blood sugar (2 hours after meal) level

should not be more than 140mg percentage in normal individual. If it is more than 180mg, percentage a diagnosis of Diabetes mellitus can be making with certainly. When the PP sugar level is between 130 mg and 180mg /100cc of blood, the subjects are possibly at risk for diabetes. In the urine, sugar is absent normally.

Complications

- a. Acute - Hypoglycemia and Diabetic ketoacidosis
- b. Long term - Diabetic Retinopathy, Diabetic Neuropathy, Diabetic Foot and Diabetic Nephropathy

Management: Aims of treatment

- (a) Adequate control of hyperglycemia and glycosuria,
- (b) Prevention of complications,
- (c) Disappearance of diabetic symptoms, and
- (d) Maintenance the appropriate body weight

All of these, the first two are very important.

There are 4 methods of treatments available for diabetic patients

- a. Ladder diet regime,
- b. Diet and oral hypoglycemic agents,
- c. Diet and insulin, and
- d. Special treatment for complications⁶

Although oral hypoglycaemic agents (OHA) Sulfonylureas / Biguanides are effective, pharmacological treatment in NIDDM, satisfactory glycemic control could not be sustain in a patient population over a span of continued use of any combination therapies available and the annual incidence of failure of OHA is around 3-30%. The OHE failure is an inability to achieve satisfactory response including the biochemical parameters even after highest permissible dose. Metformin combined with sulfonylurea can also improve glycemic control but it may fail to maintain effect on prolonged use in patients. Insulin therapy is usual indicated in these resistant cases of NIDDM. Intense blood glucose control by either Sulfonylurea or insulin is report to have increased the risk of hypoglycaemia⁵.

Rasausadhis: In *Ayurvedic*, system of medicine, various herbal, herbo-mineral and minerals are using popularly and very effectively in the treatment of *madhumeha* with different disease conditions.

The *Rasausadhis* used in *madhumeha* with different disease conditions, which are giving below (Table 1)

Table I—Name of *Rasausadhis* used in *madhumeha* for different disease conditions

Sl.No	Name of <i>Rasausadhis</i>	Contain metals/minerals in <i>bhasma</i> (incinerated ash) / <i>sodhita</i> (purified) form	Dose	<i>Anupana</i> (Adjuvant)
1	<i>Silajatu Rasayana</i>	<i>S.Silajatu</i>	500mg increased up to 10gm	Honey, <i>salsaradigana kwatha</i>
2	<i>Mashika bhasma</i>	<i>Swarnamakshika Bhasma</i>	125-250mg	<i>salsaradigana kwatha</i> , Honey
3	<i>Mehakalanal Rasa</i>	<i>Rasasindoor, Vanga Bhasma</i>	250mg	<i>Gunjamool Kwatha</i> , milk
4	<i>Panchanan Rasa</i>	<i>S.Parada, S.gandhaka, Abhraka Bhasma, Lauha Bhasma, Vanga Bhasma</i>	250-750mg	cold water
5	<i>Vanga Bhasma</i>	<i>Khuraka Vanga Bhasma</i>	125-250mg	Honey, <i>guruchi sattva</i>
6	<i>Naga Bhasma</i>	<i>Naga Bhasma</i>	62.5-125mg	<i>Haridra swarasa, jambu swarasa</i>
7	<i>Yasada Bhasma</i>	<i>Yasada Bhasma</i>	125mg	Honey, <i>trikatu kasaya, guruchi swarasa</i>
8	<i>Chandrakala Rasa</i>	<i>S. Silajatu, Rasasindoor, Vanga Bhasma, Abhraka Bhasma, Lauha Bhasma</i>	250mg	Honey
9	<i>MehamudgaraRasa</i>	<i>Lauha Bhasma</i>	500mg	Honey
10	<i>Trivanga Bhasma</i>	<i>Naga Bhasma, Vanga Bhasma Yasada Bhasma</i>	125mg	Honey, butter
11	<i>Swarna Vanga</i>	<i>VangaBhasma, S.Parada, S.gandhaka, S.Nausadar</i>	125-250mg	Honey, butter
12	<i>Sukramatrika Rasa</i>	<i>S. Parada, S. Gandhaka, Abhraka Bhasma, Lauha Bhasma, Sodhita Tankana</i>	1-2gm	<i>Dadimba swarasa, goats milk, water</i>
13	<i>Vangeswar Rasa</i>	<i>Rasasindoor, Vanga Bhasma</i>	750mg	Honey
14	<i>Vangeswar Rasa (Y.R.)</i>	<i>Vanga Bhasma, Kantalauha Bhasma, Abhraka Bhasma</i>	375 mg	<i>Kumari swarasa</i>
15	<i>Brihat Vangeswar Rasa</i>	<i>VangaBhasma, S.Parada, S.Gandhaka, Rajat Bhasma, Abhraka Bhasma, Swarna Bhsama</i>	250mg	Goats milk, cows milk, curd
16	<i>Chandraprava Vati</i>	<i>Lauha Bhasma, S. Silajatu, Swarnamakshika Bhasma</i>	250-500mg	Water, milk, <i>sunthi churna</i>
17	<i>Pramehakulantaka Rasa</i>	<i>S.Parada,S.Gandhaka, S.Silajatu, Vanga Bhasma, Abhraka Bhasma</i>	125mg	Goats milk, luke warm water, <i>Amalaki swarasa, kulattha kwatha</i>
18	<i>Vasantakusumakar Rasa</i>	<i>SwarnaBhsama, Naga Bhasma, Kantalauha Bhasma, Rajat Bhasma, Abhraka Bhasma, Vanga Bhasma</i>	250mg	Sugar, honey, ghee
19	<i>Vidangadi Lauha</i>	<i>Lauha Bhasma</i>	250-500mg	Honey
20	<i>Vedvidya Vati</i>	<i>Rasasindoor, Kantalauha Bhasma,Abhraka Bhasma, Naga Bhasma, S. Silajatu, Swarnamakshika Bhasma, Mandoor Bhasma, Vaikranta Bhasma, S. Kasis</i>	250mg	Honey, <i>Amalaki swarasa, guduchi swarasa</i>
21	<i>Vangastaka</i>	<i>S.Parada, S.Gandhaka, Lauha Bhasma,Rajat Bhasma, Abhraka Bhasma. Swarna Bhsama, Vanga Bhasma, Tamra Bhasma, Kharpar Bhasma</i>	250mg	Honey, <i>haridra churna, amalaki swarasa</i>
22	<i>Navayasa Yoga</i>	<i>Lauha Bhasma</i>	250mg	Honey, ghee
23	<i>Mehabazra Rasa</i>	<i>Rasasindoor, Kantalauha Bhasma, S. Silajatu, Swarnamakshika Bhasma, S. Manashila</i>	750mg	<i>Mahanimba churna, honey, rice washed water</i>
24	<i>Yogeswar Rasa</i>	<i>S.Parada, S.Gandhaka, Naga Bhasma, lauha Bhasma, Tamra Bhasma, Abhraka Bhasma, Vanga Bhasma</i>	1gm	Honey
25	<i>Vasanta Tilaka Rasa</i>	<i>Lauha Bhasma, S.Parada, Abhraka Bhasma, Swarna Bhsama, Vanga Bhasma</i>	125-250mg	Honey, <i>Guruchi swarasa</i>

(Contd.)

Table 1—Name of *Rasausadhis* used in *madhumeha* for different disease conditions (Contd.)

Sl.No	Name of <i>Rasausadhis</i>	Contain metals/minerals in <i>bhasma</i> (incinerated ash) / <i>sodhita</i> (purified) form	Dose	<i>Anupana</i> (Adjuvant)
26	<i>Indra Vati</i>	<i>Rasasindoor, Vanga Bhasma</i>	250mg	Honey, ghee
27	<i>Harisankar Rasa</i>	<i>Rasasindoor, Abharaka Bhasma</i>	125-250mg	Honey, milk
28	<i>Brihat Harisankar Rasa</i>	<i>S.Parada, S.Gandhaka, Lauha Bhasma, Swarna Bhasma, Vanga Bhasma, Swarnamakshika Bhasma,</i>	250mg	Honey, ghee
29	<i>Pramehasetu Rasa</i>	<i>Rasasindoor, Abharaka Bhasma</i>	750mg	Honey, <i>Triphala churna</i>
30	<i>Megnada Rasa</i>	<i>Rasasindoor, Swarnamakshika Bhasma, Abharaka Bhasma, Kantalauha Bhasma, S. Silajatu, S. Manashila</i>	750mg	Honey
31	<i>Anandadhairab Rasa</i>	<i>S.Hingula, S.Tankan</i>	250mg	<i>Adraka swarasa, Honey</i>
32	<i>Mehakesari Rasa</i>	<i>S.Parada, Swarna Bhasma, Vanga Bhasma, Kantalauha Bhasma,</i>	250mg	<i>Water, Amalaki swarasa</i>
33	<i>Mehantaka Rasa</i>	<i>S.Parada, S.Gandhak, Abhraka Bhasma, Swarna Bhasma, Rajat Bhasma, Vanga Bhasma</i>	125mg	Honey
34	<i>Sarveswar Rasa</i>	<i>Swarna Bhasma, Rajat Bhasma, Lauha Bhasma, Abharaka Bhasma, Swarnamakshika Bhasma, S. Silajatu</i>	250mg	<i>Triphalakwatha, rasnadi kwatha, Honey</i>
35	<i>Apurbamalinivasanta Rasa</i>	<i>Vaikranta Bhasma, Abharaka Bhasma, Tamra Bhasma, Swarnamakshika Bhasma, Rajat Bhasma, Vanga Bhasma, Lauha Bhasma, Rasasindoor, S. Tankana</i>	750mg	<i>Guduchi sattva, sugar</i>
36	<i>Pramehachintamani Rasa</i>	<i>Rasasindoor, Abharaka Bhasma, Vanga Bhasma, Swarna Bhasma, Lauha Bhasma, Swarnamakshika Bhasma</i>	250mg	<i>Triphalakwatha, Honey</i>
37	<i>Brihat Somnath Rasa</i>	<i>S.Parada, S.Gandhak, Abhraka Bhasma, Swarna Bhasma, Rajat Bhasma, Vanga Bhasma, Swarnamakshika Bhasma, Kharpara Bhasma</i>	250mg	Honey
38	<i>Salsaradi Leha</i>	<i>Lauha Bhasma, Tamra Bhasma,</i>	250mg	Honey
39	<i>Vanga Avaleha</i>	<i>Vanga Bhasma</i>	500mg	Honey, old jiggery, <i>S. Gandhaka</i> ^{7,8,9,10}

Conclusion

Managing Diabetes from pharmacological aspect of new drugs, insulin pens, insulin pump, etc. help to restore life till death, but it has no surety that how long the drugs will respond and how to avoid the complications or how to treat the complications safely. However, our *Ayurvedic* medicines especially *Rasausadhies* with non-pharmacological therapy like diet, lifestyle, yoga, etc. are also highly effective in *Madhumeha* and are having no or very little complications. If complications may arise then they can be treating safely and successfully in comparison to modern science.

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