



ANALOGISM OF AYURVEDA AND CONTEMPORARY SCIENCES IN TREATMENT OF MADHUMEHA WITH SPECIAL REFERENCE TO GLYCEMIC INDEX: A CONCEPTUAL STUDY

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ABSTRACT

An outrageous disease Diabetes taking a death toll of several million people all over the world every year due to its long term dreadful complications needs a serious concern by the medical fraternity especially by the *pathy* which is most close to nature, the science of life *Ayurveda*. In *Ayurveda* this disease is called as *Madhumeha*. This thousand years old age tradition prescribes the *Pathya Apathya* for *Madhumeha* which was found as scientific, precise and organised as the present era contemporary sciences had discovered the concept of low glycemic index food articles intake for the prevention and management of *Madhumeha*. This glycemic index measure of the impact of food on your blood sugar.

KEYWORDS: Outrageous disease, *Madhumeha*, blood sugar.

INTRODUCTION

Although medical science has made great advancements in the treatment of acute diseases such as infectious illnesses, trauma, and other life-threatening conditions, we are seeing a dramatic rise in chronic diseases, including diabetes. Until recently, India had more diabetics than any other country in the world, according to the International Diabetes Foundation. Diabetes currently affects more than 62 million Indians, which is more than 7.1% of the adult population. The average age on onset is 42.5 years. Nearly 1 million Indians die due to diabetes every year.^[1]

According to the Indian Heart Association, India is projected to be home to 109 million individuals with diabetes by 2035. A study by the American Diabetes Association reports that India will see the greatest increase in people diagnosed with diabetes by 2030. The high incidence is attributed to a combination of genetic susceptibility plus adoption of a high-calorie, low-activity lifestyle by India's growing middle class.

Fortunately, while there is not yet a cure for diabetes, there are interventions and lifestyle changes we can make to affect the course of this disease and prevent complications. The healing system of *Ayurveda* offers valuable wisdom and guidance that can help us listen to the signals of our body, notice the first signs that we're

getting out of balance, and make the necessary changes to reverse the imbalances.

The conceptual study done in this paper discusses that the present era concept of intake of low GI food items in the prevention and management of diabetes mellitus and compares the same with the *Pathya Apathya Ahara Vihara* prescribed by the ancient sages in our *Samhitas* especially *Acharya Charaka*. This article also explains the role of diet and lifestyle in the prevention of development of diabetes in pre-diabetic individuals, increasing the longevity of recently diagnosed individuals without medication and increasing the longevity of individuals without complication following *Pathya Apathya Ahara Vihara* according to *Ayurveda*.

Ayurveda and Madhumeha

In *Ayurveda*, diabetes is referred to as *Madhumeha*, a Sanskrit term that directly translates as "sweet urine" disease. Indeed, when our blood sugar levels rise above a certain threshold, it spills over into the urine and can be detected. The ancient description of this disease includes an appreciation for the fact that derangements in body tissues take place due to imbalances in metabolism. The term for this in Sanskrit is *Dhatupaka janya vikruti*. The causes, symptoms, prognosis, and management of diabetes were also described in detail in the Vedic texts thousands of years ago. *Ayurveda* recognizes the multi factorial nature of diabetes, making reference to

tendencies inherited at birth i.e Type 1 diabetes as well as accumulated imbalances of potentially all three *doshas* or mind-body constitutions *Vata*, *Pitta*, and *Kapha*. Ancient seers have narrated that excess use of *guru* (heavy to digest), *snigdha* (unctuous), *amla* (Sour) and *lavana* (Salt) *rasa*, *navanna* (food prepared from newly harvested grains), *navmadhya*, *asya sukha* (sedentary life style), *atinidra* (excess sleep), *avyayama* (lack of exercise), *achinta* (lack of mental exercise), abstaining from *samshodhana* (purification) therapy are the causes of *Madhumeha*.^[2] *Acharya Charaka* has also stated that the substances which are wholesome to the body or channels of the body and substances which are pleasing to the mind are known as *pathya*. On the contrast are the *apathya* substances.^[3] As a matter of fact, the concept of *pathya apathya* is similar to the concept of *upasayanupsaya* and refers to the entire spectrum of good and bad in the range of both *ahara vihara*. *Vaidyajivana* describes that “if a man uses *pathya* there is no need of medication and if the patient doesn't observe *pathya* and indulges in *apathya* the medicine will not act”. Hence it can be said that treatment can be carried out by regulated and wholesome diet without the use of medicine.

Glycemic Index and Diabetes^[4]

- Regulation of blood glucose to achieve near-normal levels is a primary goal in the management of diabetes, and, thus, dietary techniques that limit hyperglycemia following a meal are likely important in limiting the complications of diabetes.
- Low-carbohydrate diets are not recommended in the management of diabetes. Although dietary carbohydrate is the major contributor to postprandial glucose concentration, it is an important source of energy, water-soluble vitamins and minerals, and fiber. Thus, in agreement with the National Academy of Sciences–Food and Nutrition Board, a recommended range of carbohydrate intake is 45–65% of total calories. In addition, because the brain and central nervous system have an absolute requirement for glucose as an energy source, restricting total carbohydrate to <130 g/day is not recommended.
- Both the amount (grams) of carbohydrate as well as the type of carbohydrate in a food influence blood glucose level. The total amount of carbohydrate consumed is a strong predictor of glycemic response, and, thus, monitoring total grams of carbohydrate, whether by use of exchanges or carbohydrate counting, remains a key strategy in achieving glycemic control.
- A recent analysis of the randomized controlled trials that have examined the efficacy of the glycemic index on overall blood glucose control indicates that the use of this technique can provide an additional benefit over that observed when total carbohydrate is considered alone.
- Although this statement has focused primarily on the role of carbohydrate in the diet, the importance of

achieving/maintaining a healthy body weight (particularly in type 2 diabetes) in the management of diabetes should not be ignored. Moderate weight loss in overweight/obese individuals with type 2 diabetes results in improved control of hyperglycemia as well as in a reduction in risk factors for cardiovascular disease.

- Because much of the risk of developing type 2 diabetes is attributable to obesity, maintenance of a healthy body weight is strongly recommended as a means of preventing this disease.
- GI stands for glycemic index and is a measure of the impact of food on your blood sugar. Foods with a high GI tend to quickly raise your body's blood sugar levels, by contrast foods with a low GI will raise them more slowly and over a longer period and thus even out blood glucose levels and prevents diabetes. Lower GI diets have also been associated with improved levels of good cholesterol.
- Foods are given a GI number according to their effect on blood glucose levels. Glucose or white bread is used as the standard reference (GI 100), and other foods are measured against this. It was previously thought that if you ate the same amount of carbohydrate, the whatever that carbohydrate was, it would have the same effect on your blood glucose levels but it is now known that different carbohydrate containing foods have different effects on blood glucose levels.
- The glycemic index range is as follows:
Low GI=55 or less
Medium GI=56-69
High GI=70 or more

Ahara and Vihara in Madhumeha^[5]

Ayurvedic practitioners have a multi-pronged approach to diabetes. *Ayurveda*, too, just like contemporary science recommends lifestyle remedies that include limiting foods that are high in sugar and simple carbohydrates, eating smaller portions throughout the day, eating a variety of whole-grain foods, complex carbohydrates and vegetables every day, less fat and using less salt. It is also important to avoid smoking, reduce intake of alcohol, sleep adequately, check blood sugar levels periodically, check weight periodically and maintain ideal body weight.

- Ideally, your food proportion should be 60% vegetables, 30% protein, 10% carbohydrates with half an hour of mild exercise such as walking. The diet should be a *Kapha*-pacifying diet and should include lentils like *moong* and its *yusha* preparation in maximum amount.
- Cereals like wheat, rice called *sathi* rice should be taken but they should be at least one year old. New cereals are harmful for diabetes.
- *Yava* is the most important cereal which should be taken by the *madhumehi* in maximum amount and in varied food preparations like mixing with wheat and making chapattis, in form of *bhaat* preparation, in the form of age old *sattu* preparation, in the form of

its water preparation and taking it several times throughout the day,

- *Trinadhanya* like *sava*, *kanguni* are also beneficial.
- Vegetables having the *guna* of *tikta rasa* are best for diabetic patient like *danti*, *ingudi*, *turai*.
- Oils like *sarso* and *alsi* are best for *madhumehi*. For individuals suffering from type 1 diabetes or as said by *Acharya Charaka krisha vyakti* can take non veg diet like *vishikara*, *pratuda pakshiyon* and *jangala pashu mamsa*.
- In case of sweet items a little amount of *madhu* and *guda* can be given to patients. Intake of protein should, however, be limited as it can strain the kidneys. Similarly, limit the intake of fat as the deficiency of pancreatic enzymes makes digestion of fat difficult.
- A *madhumehi* should avoid eating rice, potato, sweet fruits, white flour, wheat, red meat and sago. He or she should also avoid sugar, sugar cane, jaggery and juices of sweet fruits. In terms of fruits, oranges and lemon are good.

Treatment

- *Acharya Charaka* has said that *nidana parivarjana* is the best *chikitsa* of *prameha*. Besides herbal medication, *Ayurveda* recommends the *Panchakarma* as a cleansing treatment program.
- *Snehana* and *shodhana* are also the basic treatment methods which are employed dependent on the condition and body type of the patient.
- In case of *sthula* persons *panchkarma* is indicated for reducing the weight which according to contemporary science is one of the risk factors as pre diabetic. *Acharya Charaka* has mentioned about *udvartana*, *sarshapa taila abhyanga* and *vijaysara* and *khadirasara* named drug whose water is

prepared and *avgahan* is done to achieve weight reduction.

- *Acharya Charaka* has also mentioned (*vyayamayogervividhere*) the importance of exercise in *madhumehi* individual.

Herbs

In case of herbal drugs like *daruharidra*, *triphala*, *mustak*, *devdaru*, *amla*, *patha*, *ajwain*, *vaividang*, *haridra* can be taken either making the combination or taking single drug whether in its powder form or making its *kwath* preparation but the point should be kept in mind that these drugs should be taken in good amount and repeatedly so as to get the desired result because unlike allopathic drugs which act to the point these drugs doesn't as are given in macroscopic form. And if these drugs are taken with *anupana* of *yava* water then it will result in a boon to a *madhumehi*.

- Some combinations can be taken by the individual each and everyday irrespective of the season like *Yava Sattu*: *yava* dipped over night in water and then given *bhavna* of *triphala kwatha* and then its *sattu* is made and taken with water mixed with little amount of *madhu* in it.
- *Amla churna*+ *haridra churna* mixed with water and *madhu*.
- *Phalatrikadi kwath*: *Triphala* + *daruharidra* + *indrayana* + *mustaka kwath* prepared and mixed with *haldi kalka* and then *madhu*. The all above mentioned drugs could also be taken in *udakapan* meaning making the water and to be taken several times in a day.
- Maximum use of two things i.e *moong dal* and *amla* should be done by the individual in varied food preparations to get the best result.

Below is a table showing the GI index of different food articles prescribed by *charaka* in *madhumeha*.^[6]

Food Item	Glycemic Index
<i>Sathi rice</i> (<i>Oryza sativa</i>)	69-+15
<i>Sava</i> (<i>Panicum sumatrense</i>)	52
<i>Yava</i> (<i>Hordeum vulgare</i>)	37
<i>Kanguni</i> (<i>Celastrus paniculatus</i>)	52
<i>Ingudi</i> (<i>Balanites aegyptica</i>), <i>Bottle gourd</i> (<i>Lagenaria siceraria</i>), <i>Turai</i> (<i>Luffa acutangla</i>), <i>snake gourd</i> (<i>Trichosanthes cucumerina</i>), <i>Bitter gourd</i> (<i>Momordica charantia</i>)	Less than 15
Vegetable oils like <i>sarso</i> (<i>Brassica nigra</i>) and <i>alsi</i> (<i>Linum ussitatissimum</i>)	0
<i>Vishikara</i> , <i>pratuda pakshiyon</i> and <i>jangala pashu mamsa</i> i.e meat of forest animals and birds	0

DISCUSSION

Modern science says that low GI foods are beneficial for pre diabetic and just diagnosed individuals. The reason lies in the fact that low GI food makes feel person less hungry which means that rather than controlling your cravings for food by will power alone you are controlling them by satisfying your body. On the GI diet your desire to overeating is greatly reduced and thus weight is

controlled which is the prime risk factor for developing diabetes. Just like the modern science concept^[8] *Acharya Charaka* has also mentioned the diet which have low GI or in our *ayurvedic* perspective the food items which are *guru* in *guna* but *aptarpana* in nature because such food items maintains the satiety or *tripti* of *madhumehi* for a long time and releases glucose at sustained rate in the blood circulation. The amount of carbohydrate ingested is usually the primary determinant of postprandial

response, but the type of carbohydrate also affects this response.^[9] Intrinsic variables that influence the effect of carbohydrate-containing foods on blood glucose response include the specific type of food ingested, type of starch (amylose versus amylopectin), style of preparation (cooking method and time, amount of heat or moisture used), ripeness, and degree of processing. Extrinsic variables that may influence glucose response include fasting or preprandial blood glucose level, macronutrient distribution of the meal in which the food is consumed, available insulin, and degree of insulin resistance.

On the other hand *Charaka* also states the following factors determine *pathya* and *apathya* effect of a substance or procedure i.e. *Matra* or Dose, *Kala* or time, *Kriya* or mode of preparation, *Bhumi* or habitat, *Deha* or constitution and *doshas*.^[10]

The glycemic index of foods was developed to compare the postprandial responses to constant amounts of different carbohydrate-containing foods. The glycemic index of a food is the increase above fasting in the blood glucose area over 2 h after ingestion of a constant amount of that food (usually a 50-g carbohydrate portion) divided by the response to a reference food (usually glucose or white bread). The glycemic loads of foods, meals, and diets are calculated by multiplying the glycemic index of the constituent foods by the amounts of carbohydrate in each food and then totaling the values for all foods. Several randomized clinical trials have reported that low-glycemic index diets reduce glycemia in diabetic subjects. Moreover, the variability in responses to specific carbohydrate-containing food is a concern. Nevertheless, a recent meta-analysis of low-glycemic index diet trials in diabetic subjects showed that such diets produced a 0.4% decrement in A1C when compared with high-glycemic index diets.^[11] However, it appears that most individuals already consume a moderate-glycemic index diet. Thus, it appears that in individuals consuming a high-glycemic index diet, low-glycemic index diets can produce a modest benefit in controlling postprandial hyperglycemia. The whole point of discussion is that *pathya* and *apathya* mentioned by *acharayas* in *samhitas* for various diseases are as much scientific and authentic as they were 1000 or 2000 B.C back. This is well understood by the example of *madhumeha* given in this study. So it is the duty of an *ayurvedic* physician so to create awareness among the general public about the principles of *mithya ahara vihara* and *achara* to represent the remedial potential of *ayurveda* on a worldwide theatre.

CONCLUSION

The essence of this article lies in the fact that whether it is ancient science or contemporary sciences the approach for alleviating chances of diabetes in pre diabetics are one and the same in case of diet and lifestyle but *ayurveda* additionally provides some *shashtrikta aushdhis* and *pathya apathya* so as to delay the timing of

frank diabetes and prolonging the time of complications in persons suffering from diabetes or *madhumeha*.

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