# TO STUDY THE ROLE OF KAYACHIKITSA IN MANAGEMENT OF METABOLIC DISORDERS

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## ABSTRACT

The metabolic disorders are major health issues of today's scenario and incidences of metabolic diseases increases day by day due to the disturbed pattern of life style. Ayurveda texts have described term "Santarpanjanya Vikaras" which resembles diseases of defective tissue metabolism. Ayurveda mentioned that improper dietary habits and sedentary life style affects state of Agni which resulted Ama production and finally leading to the metabolic syndrome. The vitiation of Dosha, diminish state of Dhatu and blockage of channels, etc. also can initiate pathogenesis of metabolic disorders.In the present article we are studing the role of kayachikitsa in management of metabolic disorders.

## INTRODUCTION

In recent years MS is gaining too much importance by the physicians and researchers worldwide, because of its complex etio-pathogenesis, clinical presentation, management and major complications. The MS consists of various components which are result of defective metabolism and increases the risk of Coronary Artery diseases (CAD) and Diabetes Mellitus (DM) (1). The pathogenesis of MS is complex but central obesity seems to be a key factor to develop MS. It is a major health hazard in the developed countries and gradually accruing its place in developing countries too, which leads to other hazardous complications such as CAD, CKD, NAFLD and PCOD etc (2). Initially MS was known as Syndrome X or Insulin Resistance syndrome (3) . Syndrome X was the name proposed by Reaven (1988) in a lecture of the American Diabetes Association (4) . According to Reaven, Syndrome X was a group of associated conditions that were important in the development of coronary artery disease and he included hyper-insulinemia, glucose intolerance, hyperglycemia, elevated low density lipoprotein cholesterol and hypertension in the syndrome.. In 1998 World Health Organization has introduced the original definition of MS (5). The main components of MS include an increased blood pressure, increased triglyceride levels, increased blood glucose levels, Central obesity and Decrease High density lipoprotein (HDL)(6). The Metabolic syndrome is common in adult populations all over the world and the incidence of MS in the Indian subcontinent is increasing rapidly. The sedentary life style and unhealthy food habits contributes a lot in rising rates of obesity, which is a major contributor to develop MS (7) . The prevalence and severity of obesity in children is rising Worldwide and it is an alarming and initiating feature of MS in younger population (8) . The unhealthy and high caloric diet along with sedentary life style causes central obesity (9). The central obesity increases the risk of insulin resistance by the release of abundant FFA in the circulation which occupies insulin receptors and causes Pre diabetic or hyperglycemic state which in turn leads to metabolic syndrome (10) . If this pre diabetic state or full pledged diabetic stage is ignored, condition of metabolic syndrome emerges (11) . Over a period of time if not cured this condition of MS may transform in to other major and hazardous cardio vascular and other complications (12) . This transformation of this in to major and hazardous cardio vascular and other complications depends up on the degree of risk factors which are associated the clinical condition (13) . Thus the Metabolic syndrome provides many challenges to government and healthcare providers from birth to death. The recent data reflects that increased industrialization worldwide is associated with rising rates of obesity, which is anticipated to increase prevalence of the MS dramatically, especially as the population ages. The purpose of the present work is to introduce an effective and safe Ayurveda based line of management of MS as well as to introduce other preventive measures such as yoga and meditation for metabolic

syndrome and to prevent its life threatening major metabolic complications II. Definition of Metabolic Syndrome 2.1The National Cholesterol Education Program - Adult Treatment Panel III (NCEP-ATP III) in 2004 by the presence of 3 or more, out of these 5 criteria"s1- Waist circumference >102 cm in males >88 cm in females 2- Hyper Triglyceridemia; Triglyceride >150 mg/dl or specific medication. 3- Low HDL cholesterol; 130/85 mm/Hg or specific medication. 5- Fasting plasma glucose >100 mg/dl or specific medication or previously diagnosed Type2 DM. 2.2 The International Diabetes Foundation (IDF) in 2005 has defined MS, by the presence of 2 or more, out of these 4 criteria"s1-Fasting Triglyceride > 150 mg/dl or specific medication 2-HDL cholesterol 130/85 mm/Hg or prevous diagnosis or specific medication. 4-Fasting Plasma Glucose > 100mg/dl or previous diagnosed Type2 DM or specific medication. 2.3 The American Heart Association (AHA) in 2005 has defined MS, by the presence of 3 or more, out of these 5 criteria"s1- Waist circumference >102 cms. 2- Hyper Triglyceridemia; Triglyceride >150 mg/dl or specific medication. 3- Low HDL cholesterol; 130/85 mm/Hg or specific medication. 5- Fasting plasma glucose >100 mg/dl or specific medication. 2.4 The American Association of Clinical Endocrinologists (AACE) in 2003 has defined MS, by the presenceImpaired Fasting Glucose i.e. IFG (FBS 110-126mg/dl), Impaired Glucose Tolerance i.e. IGT (PPBS >140-199 mg/dl) + 2 out of these criteria"s1-BMI >25 Kg/m2 2- Hyper Triglyceridemia; Triglyceride >150 mg/dl or specific medication. 3- Low HDL cholesterol; 130/85 mm/Hg or specific medication. 2.5 The European Group for the study of Insulin Resistance (EGIR) in 1999 has defined MS, by the presence- Insulin Resistance or Hyperinsulinemia + 2 or More of these criteria"s1- Waist circumference >90 cm in males >80 cm in females 2- Hyper Triglyceridemia; Triglyceride >175 mg/dl or specific medication. 3- Low HDL cholesterol; 140/90 mm/Hg or specific medication. 5- Fasting plasma glucose >110 mg/dl or specific medication. 2.6 The World Health Organization (WHO) in 1998 has defined MS, by the presence of-Diabetes Mellitus or Impaired Glucose Tolerance i.e. IGT (PPBS >140-199 mg/dl) or Insulin Resistance + 2 or More of these criteria"s1. BMI >30 Kg/m2 or Waist Hip ratio >0.90 in males >0.85 in females 2- Hyper Triglyceridemia; Triglyceride >150 mg/dl or specific medication. 3- Low HDL cholesterol; < 39 mg/dl in females or specific medication. 4- Hypertension; Blood pressure>140/90 mm/Hg or specific medication. 5- Urinary Albumin excretion > 20 µg/min III. AYURVEDIC CONCEPT OF MS The classical Ayurvedic texts have vividly described Santarpanjanya Vikaras (Comprise of diseases due to over nutrition and defective tissue metabolism). Ayurveda mainly focus upon conservation of health rather than disease eradication. It presumes that improper dietary habits and deranged functions of different sets of Agni (Metabolic fire) give rise to formation of Ama (reactive antigenic factor). Since last few decades, the conventional system of medicine is focusing on the concept of metabolic syndrome, which seems very similar to the concept of Santarpanjanya

Vikaras of Ayurveda. Various factors in the body cause disturbances in the production of Medadhatu (Lipids) prime of them are Medodhatvagni (Lipid metabolic process). In this whole process the quantity (amount and proportion) and quality (contents) of Medadhatu (Lipids) are also disturbed by the same. When Medadhatu (Lipids) interacts with preformed form of Ama (reactive antigenic factor), it changes and alters the quality and quality of fatty tissues including cholesterol. The interaction of Ama (reactive antigenic factor) with fatty tissues is known as Sama Medadhatu (unhealthy and bad lipids). This form of Ama (reactive antigenic factor), when circulates all over the body may lead to blockade of micro-channels and precipitate antigenic reactions and generate series of inflammatory events in the body. If such categories of Ama (reactive antigenic factor) interact with Medadhatu (Lipids), it may lead to a variety of metabolic disorders. 3.1Samprapti ghataka (Pathological factors) of Metabolic Syndrome 3.1.1 Doaa - It is a kapha predominant vyadhi but involvement of vata and pitta cannot be neglected. So, collaboration of three Doaas propagates the process of pathogenesis of MS. Kapha- It plays an important role at the time of accumulation of Amadosa. Most of the symptoms of MS come under the category of Kaphavyaidhi i.e. Central obesity, Hyperglycemia and Dyslipidemia etc. Pitta- In the patients of MS, pittaja lakshanas are very less but most of them have Tikshagni. Srotosanga due to medovridhi and potentiate Samana Vayu to stimulate the jatharagni so, most of the persons have good appetite. It plays role in the stage of vitiation and localization of Ama dosas. Vata- Vata can create two situations in the body. 1.The state of Avrita Vata which provocates the Agni and ultimately increasing the demand for the food (Abhyavaharana shakti) and absorbs the nutrients. 2-Inactiveness of Vyana vayu. Vyana vayu is responsible for proper circulation and distribution of Dhatus. Due to, Sanga in srotasa, the nutrients cannot be carried by Vyana vayu to their respective Dhatus. Hence, involvement of Samana vayu can be clearly postulated with the evidence of Agni sandhuksana and improper distribution of fat in the body proves the involvement of Vyana vayu. 3.1.2 Dusya - Without Dosadusya sammurchchhana disease process is not possible. In the pathogenesis of MS, the excessive production of abnormal Medadhatu (Visceral adipose tissue) occurs, which ultimately leads to Insulin resistance, Hyperglycemia and Atherosclerotic changes etc. Rasa, Rakta Mamsa, Meda, Majja and sukra dhatu are to be seen Dusya in MS. Among these Rasa, Mamsa and Meda are the pradhana Dusya in the pathogenesis of MS. 3.1.3 Agni - Due to Dhatvagni mandata there is excessive formation of Abnormal Visceral adipose tissue. Which causes release of excess FFA, which mimics insulin molecule and causes Insulin resistance by downstream regulation of the insulin receptors. 3.1.4 Srotasa –In MS, the main srotasa involved are Rasavaha, Raktavaha, Mamsavaha and Medovaha srotasa along with the involvement of other Srotasa. The srotasadusti in Rasavaha, Mamsavaha and Medovaha srotasa plays key role in the pathogenesis of MS.

Avyayama, excessive intake of Madhura Dravya and sedentary life styles are vitiating factors for Medovaha srotasadusti as mentioned in Caraka Samhita. It indicates the clear involvement of Medovaha Srotasa along with Rasavaha Srotasa. Atisveda and Daurgandhya indicate the involvement of svedavaha srotasa. Presence of Atipipasa indicates the involvement of Udakavaha srotasa. In the pathogenesis of MS, increased fat deposition inside the muscle (vasa) indicates the involvement of Mamsavaha Srotasa. 3.1.5 Srotodusti - In the pathogenesis of MS, Srotosanga and Vimarga gamana are initial defect in Srotasa followed by Atipravritti. 3.1.6 Udbhava sthana - Amasayottha vyadhi 3.1.7 Vyakta sthana – Udara, Spika, stana and Gala pradesa 3.1.8 Sanchar sthana – Sarvasarira by Rasa and Raktavaha srotasa 3.1.9 Svabhava – Chirkari 3.1.10 Sadhyasadhyata - Krichha sadhya vyadhi yurveda the heritage of Indian civilization is not only a medical system but also a full-fledged science, consisting of all medical and ailed branches essential to lead a healthy life. Being a science *Ayurveda* believes in supreme power.

The *Ayurveda* has attracted the attention of global population specially the developed countries since ages. The main reason behind this was the holistic approach of *Ayurveda*, humanitarian approach, simplicity of the procedures, cure of chronic and incurable disease safer and non-toxic herbal resources.[1]

The purpose of Ayurveda is to maintain health and to treat diseases, in order to achieve the ultimate goal. It is applicable in every fact of human life, with its own unique. A principle in understanding any disease by either preventive or curative wedge is necessary. This may be the fact due to which this science is persisting through centuries beginning from time immemorial.[2]

Scientific and technological progress has made man highly sensitive and critical; there by giving rise to different types of health problems. The advancement of industrialization and communication is contributing towards sedentary life styles; in turn causing chronic non-communicable diseases like diabetes mellitus, etc. in fact it is the first life science, which identified diagnosed and managed diabetes. In spite of all sorts of advancement of science man is not able to stay himself in the boat of happy and healthy life. So it is disadvantage rather than an asset.

*Madhumeha* is a disease known to mankind since Vedic period and it is mentioned as one of the 20 obstinate urinary disorders. It is the present burning issue alarming the world. With synonym of 'Rich man's disease', particularly because a person who is able to enjoy the pleasure of life without any perceptible exercise is usually affected with this disease.[3]

*Madhumeha* is a chronic metabolic disorder and the symptom appears in relation with *Mootravaha Samsthana*. Diabetes mellitus is a chronic metabolic endocrinal disorder, which has similar pathogenesis as the *Madhumeha* . Thus the comparison between *Madhumeha* and DM is justifiable.[4]

In Ancient treatise we find a vivid description
Of the disease solely attributed to metabolic derangement along with genetic
predisposition. *Madhumeha* subtype
of *Vataja Prameha* due to involvement of vital elements causes alarming health instability with higher prevalence. *Vata* is the conductor of healthy life and vitality supporter of all the embodied beings and sustains long life free of disorders.[5]
*Susruta* emphasized
that *Vyanavata* and *Apanavata* vitiation cause *Sukra*
*Dosha* and *Prameha*. *Vyanavata* because of its potential to perform the functions related to each and every body element and *Apanavata* due to its potential related with excretion. When we exploit *Madhumeha* we cannot deny their credibility in the pathogenesis. This superior consideration of *Susruta* proved to be essential before profound treatment modality.[6]
Changing life style, lack of exercise, fast foods, improper unbalanced diet, and sedentary life are showing upward trend in India. This has lead to the emergence of Diabetes Mellitus in the region. Iatrogenic or genetic predisposition and degenerative changes proved fatal in diabetes mellitus.[7]

**Purpose of the study**

The prevalence of diabetes is approximately twice in the urban than in rural areas. It is suggested that the increase in the occurrence of this disease is possibly due to changing life style. Lack of exercise, fast foods, improper unbalanced diet, and sedentary life are showing upward trend in India. This has lead to the emergence of diabetes mellitus in the region. In spite of using oral hypoglycemic agents and insulin modern medicine is least bother about the sedentary life style and improper diet, so struggling to provide better management to counteract the complications and to provide better health.
So many research works have been carried out in relation to *Shamana* treatment as mentioned in classics and their therapeutic effect is proved. Present research work is intended to evaluate the effect of herbal combinations used as different line of treatments.

**Prevalence**

*Madhumeha* has become a global problem in spite of much advancement in modern medicine.[8] The World Health Organization stated in 1998 that a 122 % rise in the number of adults with diabetes is projected by 2005, to reach 300 million adults
Worldwide. There are four reasons for this two-fold global increase: Firstly, we are living longer; over-nutrition and lack of exercise are prevalent; the disease being transmitted in a hereditary fashion; such transformations have taken place within the Indian population also. In India, it is estimated that 19 million cases occurred in 1995, rising to a projected 57 million by the year 2025 ($1/6^{th}$ of the world total). According to recent epidemiological studies there has been a 40% increase in diabetes prevalence amongst urban during the last five years.[9] Even the NIDDM a commonest form of DM is most common accounting for 85-99% of the patient

depending on geography and ethnicity, occurs in adults, more so over 35 years of age.[10] The prevalence of NIDDM is on the rise more alarmingly in the developing nations, ranked 7th among leading cause of death. It has been rated 3rd when all its micro vascular, macro vascular, neuropathic complications is taken into account.[11] The cost of treating diabetes an associated complication exceeds $ 100 billion per year.[12]

It has long been recognized that drugs represents only part of the management of *Madhumeha* and other intervention such as education, modification of diet and promotion of physical health play a crucial role. If the dietary control and exercise programmes do not improve the condition then the medication is added. Many of patients won't have patience for long term therapies, complicated therapies like exercise etc.[13] The OHA viz, Sulfonylurea, Bigunides have associated with adverse effect like nausea, vomiting, lactic acidosis, hypersensitivity etc. After long term administration their action declines, up to 50% patients of NIDDM initially treated with OHA ultimately need insulin. Hence we find no satisfactory remedies for *Madhumeha* in contemporary medical science.

**About Concept**

The word *Madhumeha* in terms of 'Diabetes Mellitus' it is the present burning issue alarming the world. With synonym of Rich man's disease,' *Madhumeha* is a chronic metabolic disorder and the symptom appears in relation with a *Mootravaha Samsthana*. Diabetes mellitus is a chronic metabolic endocrinal disorder, which has similar pathogenesis as the *Madhumeha*. Thus, the comparison between *Madhumeha* and DM is justifiable.[14]

The present study was designed as 'Evaluation of the efficacy of *Akulyadi Yoga*'. Medicinal plants since time immemorial have been

Used virtually in all cultures as a source of medicine. Several herbs have been described in *Ayurvedic* treasure of therapeutics, which have a beneficial effect in the management of *Madhumeha*. *Akulyadi Yoga* is one such a combination which acts as *Mootra Sangrahaneeya* and also reduces the high blood glucose.[15]

As the *Madhumeha* is *Kapha Vata Pradhana Vyadhi, Akulyadi Yoga* seems to be very effective. It contains *Akuli, Amalaki* and *Haridra*. All these drugs are *Kapha* and *Vata Shamana* property with *Ushna Virya*. Thus, in the present study an attempt is made to "Evaluation of the efficacy of *Akulyadi Yoga*", with a view to find out a therapeutically efficacious, safer, cost effective and easily available drugs.

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