



SIGNIFICANCE OF DIET AND REFORMED GUT MICROBIOME IN STHAULYA CHIKITSA – A CONCEPTUAL REVIEW.

Ayurveda

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ABSTRACT

Human being is a byproduct of macro and micro nutrients ingested in the form of food. As said “Annamayam idam shareeram”, (what you eat, that you are) the influence of diet on one's body is significant. The very physic and built of a person depend on the type of food habit he is on. In case of obesity, other influences as genetic factor, sedentary lifestyle and stress, is unquestionable, but the effect of diet on the gut microbiome and its influence on the health and illness mainly obesity, is significant. The extended literary review has opened views of (brihatrayee) ayurvedic classics regarding ahara dravya (food grains, pulses and vegetables) placing an evident role in sthauilya (obesity). The very nature i.e rasa (taste), guna (nature), virya (potency), vipaka (metabolic end product) of dravya do not favour accumulation of fat without affecting the nutritional aspects. The concept is enriched by the views of today's researchers that there is a specific role of diet with whole grains, vegetables and fruits, having fiber and complex carbohydrates lead to the production of short chain fatty acids which may be considered as the primary factor, influencing composition and functionality of gut microbiome, and in turn on built of the body. Effort made here is to disclose the relation between diet and sthauilya based on the ayurvedic principal and diet based transformation of gut microbiome a major contributing factor for built of the body through modern perspective.

KEYWORDS

Sthauilya, Obesity, Diet, Gut Microbiome.

INTRODUCTION

It is well known fact that the greatly adopted western life style, has led us to metabolic disorders or lifestyle disorders. One among them is obesity, which is the root cause for other manifestations such as hypertension, coronary heart disease, arthritis and so on. Referring to ayurvedic classics, there is an explanation about ashtaninditapurusha. They are atisthauilya (obese), atikarshya (too lean), atiloma (too much of body hair), aloma (no hair) atigaura (over fairness), atikrishna (over dark complexioned), atideergha (over height), atihrisva (too short statured). Obesity (atisthauilya) is first among them [1]. They have also explained about its cause, signs and symptoms, as well as the management. Management of such disorders is mainly based on ahara (diet), vihara (exercise) and to some extent aushadha (medications).

The effort of modern researchers has evidenced the effect of some specific diets on the gut microbiome and the consequence being obesity, leanness, boosting or lowering the immune status or other health issues.

Transformation of gut microbiome in relation with ahara dravya (food articles) [2], such as Yava (barley), Kulattha (horsegram), Madhu(honey), Takra (buttermilk) etc has been an interesting study for the recent researchers. The action of these Dravyas on Gut Microbiome and its rationale in aetio-pathogenesis is substantiated. Release of energy as well as synthesis of short-chain fatty acids are the major factors in treating obesity and other metabolic disorders [3]. The same set of food articles have a strong recommendation by many of the ayurvedic classics.

Review Results

The extensive search includes ayurvedic classics namely charaka samhita, sushruta samhita, ashtanga hridaya, bhavaprakasha, dravya guna vijnana and Research articles which provided the valuable inputs. Basing on the Karya Karana Siddhanta, sthauilya is viewed through Nidana parivarjana and Guru apatarpaka ahara as chikitsa sutra and best of the research articles are searched and their perspectives on transformation of Gut Microbiome through specific diet to treat obesity is quoted.

Nidana of Sthauilya

Nidana or hetu (causative factor) is considered to be one among trisutras (hetu, linga, aushadha) and is an important factor that decides the level of health in an individual [4]. The causative factors of atisthauilya as mentioned in Charaka Samhita, Sushruta samhita and Ashtanga hridaya are as follows.

1. The person who is always on snigdha, madhura, guru, picchila in nature the person likes to eat navanna, navamadhya, anupamamsa, gudanna in large quantities.[5]

2. One who is not indulging in any physical activities (sedentary life style) and has the habit of divaswapna (day sleep) [6].

Chikitsa:

The dietary intervention must be based on the chikitsa sutra of sthauilya. sthauilya is a santarpanotha vikara the treatment should be apatarpaka in nature [7]. Aharadravya should be guru (heavy for digestion) to pacify vata and agni [8,9] which are normally aggravated in obese subjects. The prompt selection of such aharadravyas is obligatory.

Table 1: Dravya Recommended For Sthauilya As Per Classics With Their Guna And Karma.

Sl no	Dravyanama	Guna	Karma
1	Yava	Ruksha Sheeta Guru	Balyasthairyakara kaphamedaghna [10,11,12]
2	Kulattha	Kashaya rasa, Ushna, Amlavipaka	Kaphaghna [13, 14, 15]
3	Jurna	Kashaya Madhura, Sheeta	Kapha pitta nashaka [16]
4	Shyamaka	Kashaya Madhura, Sheeta	Kapha pitta nashaka [17]
5	Mudga	Kashaya Madhura Ruksha Sheeta	Kapha pitta nashaka [18,19]
6	Kodrava	Kashaya Madhura Sheeta	Kapha pitta nashaka [20]
7	Madhu	Kashaya Madhura Ruksha, Guru.	Kaphanashaka, chedaka [21]
8	Amalaki	Amla Kashaya	Tridosha hara [22]

As per Astanga Hridaya, there is reference about laja and dhana (bhrishtayavadi) for obesity. There is a mention in sushruta samhita about madhuvarga [23,24] takravarga [25] which also have potent action in the same field. Takra is known for its soothing property and maintains the healthy environment of the gut thereby enhancing the immunity. Although there are different types of takra depending on different methods with which it is prepared, critical selection is necessary.

Mode of Action

Role of Raw and Fibrous Diet

It has been proved that the pathophysiology, prevention and management of obesity are influenced by the diet. Complex carbohydrates as oligosaccharides, which are slowly digestible are termed as prebiotics and can transform human health and the gut microbiome. Gut microbiome can metabolize complex carbohydrates and fats through fermentative processes to produce Short chain fatty

acids which have their actions in favour of maintaining normal BMI. The by-products of fermentative reactions have significant effects on the gut environment and on the host.

Fiber, the nutrient and food component has an important impact on gut microbiome. Some dietary fibers do not undergo metabolism in the small intestine. They get degraded by fiber-degrading microbes in the colon, resulting in the production of Short chain fatty acids [26]. The production of Short chain fatty acids is increased by vegan and vegetarian diet. A regular intake of foods of plant origin such as cereals, pulses, (whole grains), vegetables and fruits, help in modulating gut microbiome [27]. Several factors may influence gut microbiome, leading to gut dysbiosis, influencing physiological as well as pathological conditions [28].

The known fiber-degrading bacteria are bacteroidetes, prevotella, treponema. Which prevail mostly in vegetarian subjects. Bacteria abundant in western subjects are bacteroides, alistipes, bilophila [29].

Table 2: Most Prevalent Bacteria In Subjects On Agrarian And Western Diets. [30]

Diet	Bacteria
Agrarian diets	prevotella, faecalibacterium, lachnospira, roseburia, eubacterium
Western diets	bacteroides, alistipes, bilophila

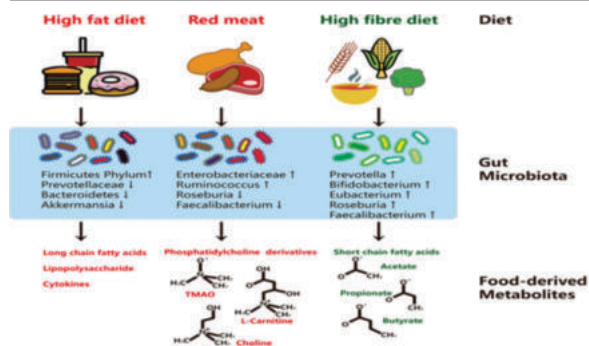


Fig 1: Inter Relation Of Dietary Metabolism And Gut Microbiome. [31]

DISCUSSION

The concept of pathya was very well established since samhita kala. Acharyas had clear view on the digestion and absorption not only in the intestine but much deeper (cellular) levels which is explained through the concept of Agni (jatharagni, dhatwagni and bhutagni). The concept of aha employed as an intervention in shatula chikitsa based on the principle "Guru cha apatarpanam" using the above listed dravya can be understood in its original sense. It can also be viewed through another angle that remodeling body weight by modification of gut microbiome. Gut microbiome plays an important role in regulating human health and disease status, affecting the development of the immune system, metabolizing dietary nutrients and drugs, and synthesizing vitamins, bioactive molecules, or other beneficial or detrimental metabolites. Several factors may influence gut microbiome, leading to gut dysbiosis, influencing physiological as well as pathological conditions.

CONCLUSION

The efforts of modern researchers have re-established the facts that, whole grains like barley, horse gram and raw fruits and vegetables as they are more fibrous recast the micro flora, influencing on gut microbiome. As per the views of researchers, diet rich in fibers boost up the growth of prevotella, faecalibacterium, lachnospira, roseburia, eubacterium which are mostly initiate body mechanism so that added fat accumulation is decelerated and can effectively intervene in shatula (obesity).

Clinical Significance

In-fact, gut microbiome produces several health promoting or detrimental metabolites, depending on the substrates during and after digestion. Specific dietary interventions may induce changes in the gut microbiome which has prime role in mitigating metabolic disorders.

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