



Journal of Ayurveda & Holistic Medicine

www.jahm.co.in

eISSN-2321-1563

REVIEW ARTICLE

OPEN ACCESS

URIC ACID METABOLISAM: AN AYURVEDIC PERSPECTIVE

PRASHANTH A.S.^{1*}

Abstract

The structural and functional integrity of the body depends upon food. The *panchabhoutika* ahara that is ingested undergoes various paka by the jatharagni, bhootagni and the dhatwagni i.e, the metabolic activity and gets converted into the body elements and then gets ,assimilated in the body. Any impairment in the functions of agni leads to improper formation of shareera dhatus and their mala which becomes the cause for the manifestation of diseases in the body. In the Same way Purines perform many important functions in the cell, contribute to modulate energy metabolism and play important role in the physiology of platelets, muscles etc. Under physiological conditions purine metabolism maintain a balanced ratio between their synthesis and degradation and in humans the final compound of purines catabolism is Uric acid and the overproduction of uric acid, generated from the metabolism of purines is proven to play an emerging roles in disease production. So here an attempt is made in this article to discuss the various aspects of Uric acid metabolism according to ayurvedic perspective.

Keywords: Uric acid, Vatarakta, gout, Jatharagni

^{*1}Professor and Principal, Dept. of Kayachikitsa, Ayurveda Mahavidyalaya, HUBLI, India

Corresponding Email id: drprashanthas@gmail.com

Access this article online:www.jahm.co.in

Published by Atreya Ayurveda Publications under the license CC-by-NC-SA.

INTRODUCTION

Ahara paka krama

*Yadannam dehadhatwojobalavarnadi
poshakam¹*

The food that is consumed will nourish the *dhatus, oja* and gives *bala* and *varna* to the body. *Agni* plays an important role in the process of nourishing the body. Impairment of functions of *agni* leads to formation of *apakwa* *ahara rasa* which cannot nourish the *rasadi dhatus*.

The *aharapaka krama* is explained in three stages namely, *Madhura avastha paka*, *Amla avastha paka* and *Katu avastha paka*. *Shadrasayukta ahara* that enters the body undergoes first *avasthapaka* in *amashaya* where the food gets completely converted to *madhurabhava*. And especially if the food consists of *Kaphavardhaka* *Madhura*, *Amla*, *Lavana* and *Picchila*, *Drava Snigdha ahara* then specifically *Kapha vrudhi* takes place and if these *gunayukta ahara* are consumed in less quantity it leads to *Kapha kshaya*. *Madhura avastha paka* leads to the formation of *phena roopi kapha*.

In the *dwitiya avastha paka* the food is in *ardhapakwa Awastha* and becomes *amlaswaroopa*. The food which underwent *madhura avasthapaka* enters the *Grahani* in *vidagdhaawastha* and forms *accha pitta* and hence there will be *pittavruddhi*. If

pittavardhaka *lavana*, *amla*, *katu*, *kshara*, *Ushna ahara* are consumed then specifically *pittavruddhi* takes place. This increased *pitta* mixes with *ahara*.

In *Thritiya avastha paka* the food that underwent *paka* in *Grahani* undergoes *rasa shoshana* by *agni* and reaches *pakwashaya* in *pinda swaroopa* and *katurasayukta*. Hence due to *rookshata* and *katu rasa vata vrudhi* takes place. This is called as *katu avastha paka*.

Bhutagni

*Yatha swam swam cha pushnanti dehe
dravyagunah pruthak*

*Parthivaha parthivaneva sheshah
sheshanscha kritsnashah²*

Panchabhootamaka ahara nourishes the same entities in the body. *Panchabhootagnis* present in the *ahara* nourish the *panchamahabhutagnis* in the body like the qualities of *parthiva ahara* like *guru*, *khara*, *kathina*, *manda* and *sthira gunas* enrich the *guru*, *khara*, *kathina*, *manda* and *sthira gunas* in the body. Likewise the *jaleeya guna* enriches the *jala guna* of the body. In this way the whole body gets nourished by the qualities of the *paripakwa ahara*.

In the body there are five *bhootagnis* which are *Bhouma*, *Apya*, *Agneya*, *Vayavya* and *Nabhas*. These *bhutagnis* digest the respective qualities present in the food and they nourish the respective entity in the body i.e, the *gunas*

of panchamahabhutatmaka ahara Dravya nourishes the respective panchabhoutika dehadravya.

Charaka has referred *bhutagni* in the context of his description of the process of normal digestive events. The digestion of food by *jatharagni* leads to the breakdown *sangatabheda*

of the former into five distinct physico-chemical groups eg, *parthiva*, *apya*, *agneya*, *vayavya* and *nabhasa*. The agni present in substances belonging to each group is, then stated to digest the substance of that group, leading to a radical change in their qualities *vilakshana guna*. Thus food substances are rendered fit for being assimilated into and built up as parts of the corresponding bhuta class of substances present in the dhatus. This process of assimilation is stated to be mediated, as it were, by the seven dhatwagnis, present in each species of dhatus. According to Sushruta, this animated organism is composed of five mahabhutas and the food of a living organic being necessarily partakes the character of its corporeal components. The food which consists of the five mahabhutas is digested in its turn, by the five bhutagnis and each of its principles proceeds to augment its own analogue in the human organism.

The food ingested will be dealt with by *jatharagnipaka*. The outcome of this paka is the reduction of the basic food stuffs to

elemental substances which from the point of view of their physico-chemical properties, are classed under the five bhautic groups, namely *parthiva*, *apya*, *agneya*, *vayavya* and *nabhasa*. In the course of *bhutagni paka*, the agni moiety present in the molecules of each group eg, the *parthiwagni* in the *parthiva* group, *apyagni* in the *apya* group and so forth, is stated to digest the entire molecules, leading to a complete change in its qualities-*vilakshana gunas*. In other words, the final products of *jatharagnipaka* are so to say, suitably processed by *bhutagnipaka* and are rendered fit to be acted upon by the specific agni present in each one of the seven dhatus, before they are assimilated into the latter.

Modern physiology and biochemistry states that the main purpose of digestion of food in the elementary canal ie, *mahasrotas* is to render its different basic components like starches, fats and proteins which are entirely foreign to the body or *vijatiya*, fit for being converted into and utilized by the body as organism specific carbohydrates, fats and proteins i.e, *sajatiya*. Thus the vegetable starch or cellulose is first broken down to its elemental form- the glucose- towards the end of intestinal digestion, before the same is rebuilt in the body as organism-specific animal starch or glycogen. In the same way, fats derived from various plants and animal

sources eg, oils, ghee etc are first broken down into their elemental forms eg, fatty acids and glycerol, before they are resynthesized as organism specific lipids. Likewise animal and vegetable proteins derived from external sources are also broken down first into their elemental form the amino acids, before they are built in the body, as organism specific proteins eg, albumin, fibrinogen, most of the globulins and non essential amino acids. The above apart, some of the amino acids are also utilized for functional use like the synthesis of enzymes and some of the hormones.

The gunas potentially present in ahara Dravyas are activated by jatharagni paka and actualized by bhutagni paka in the final stages of digestive process, in the adho –amashaya-pittashaya or pachyamanashaya before they are utilized in dhatupaka.

The bhutagni paka takes place in the yakrit. The yakrit is immediately concerned with carbohydrate, lipid and protein metabolism. In protein metabolism, the liver fabricates the non essential amino acids, by employing nitrogen, either from the amino acids or from ammonia. Numerous other nitrogenous materials are synthesized in the liver, ethanalamine, creatine, choline, purines and pyrimidines. Moreover it is in the liver that the final steps of nitrogen metabolism occur, with the formation of urea and uric acid in man.

Dhatwagni

Saptabhirdehadataro dhatavo dwividham punah

Yatha swamagnibhihi pakam yanti kittaprasadavat³

The term dhatwagni is self explanatory. It refers to the agnis concerned with the paka of ahara dravyas previously dealt with by five species of dhatwagni.

The seven dhatus do the dehadharana and poshana namely Rasa, Rakta, Mamsa, Meda, Asthi, Majja and shukra. All these dhatus have their respective agni called as dhatwagni and they are also seven in number. Rasagni, Raktagni, Mamsagni, Medagni, Asthyagni, Majjagni, Shukragni and Artavagni in female. These dhatus get digested by their dhatwagni and as a result prasada and kitta bhaga are formed. eg,

Dhatwagni is mediate or catalyse further metabolic transformations of the nutrient substances before they are made available to the seven species of dhatus, through their respective or specific srotamsi for being assimilated by them, as could be seen from Charaka's observation that 'The nutrients that support the body are subjected to paka again, being acted upon by the seven dhatwagnis leading to the formation of two products the kitta and the prasada. It is also stated that 'the nutrient substances which nourish the dhatus undergo paka by the ushma of the dhatus and

then they are made available to the dhatus through their respective srotamsis⁴

The elements of nutrient substances, as processed by bhutagni are taken up for further metabolic reactions by dhatwagni. As stated earlier Ayurveda has envisaged seven specific types of agnis, corresponding to the seven species of dhatus namely rasa (plasma, tissue fluid and lymph), rakta(the elements of blood which are red in colour and which float in and circulate with the rasa dhatu), mamsa(muscle-tissue), medas(adipose tissue),asthi(bone including the cartilage tissue), majja(yellow and red bone marrow or the marrow tissue), and shukra(the reproductive element).These primary tissue elements are also spoken of as

Sthayi dhatus(formed dhatus already present in the body) and poshya dhatus (the shareera dhatus which are to be nourished).The end products of bhutagni paka are known as poshaka Dravyas eg, parthiva poshaka Dravyas, apya poshaka Dravyas, agneya poshaka Dravyas, vayavya poshaka Dravyas and nabhasa poshaka Dravyas. Dhatwagni paka is stated to metabolise the products of bhutagni paka.

Dhatwagnipaka is stated to have two aspects a)prasada paka b)kitta paka.The end products of prasada paka are utilized for the nourishment of dhatus where as those of kitta paka provide the materials for the formation

of various kinds of excretions such as sweda, mutra, purisha,vata, pitta, sleshma, karnamala, nasamala, asyamala, romakupamala etc or are synthesized as materials which are utilized in the composition of kesha and smashru, nakha and other horny structures of the body.⁵

It will be thus seen that the bhutagnipaka provides suitably processed nutrients which are taken up for dhatwagnipaka.

Poshaka Dravyas +Dhatwagnies →
Prasada +Kitta

The shareera dhatus get nourished by repeated paka of ahara rasa eg:-When jatharagni digests ahara,ahara rasa is formed like wise Rasadhatwagni digests rasa and from its prasada bhaga rasa dhatu get nourished.

Dhatwagnimandya results in the increased formation of kitta bhaga.Raktadhatwagni mandya leads to excessive formation of malaroopi pitta.

Raktaposhaka Dravyas + raktagniposhaka →
rakta+ pitta(mala)

DISCUSSION

As we see the Samprapti of Vatarakta,Rakta dhatu in its dhatwavrita vikarmakari sthiti,will be showing vriddhata or sama dhatulakshanas which in either way hampers the dhatuushmata/ dhatwagni causing improper metabolism-enzymatic actions or improper sara mala vibhajanam; forming aprinamita

dhatu along with over or lesser production of sara bhaga and malabhaga.

When Rakta gets vitiated pitta will also be, due to their samanyata in guna and pitta is also mala of rakta dhatu.⁶

Keeping these views in mind, when we see to the details of serum uric acid, which is a metabolic waste of purine metabolism (mala bhaga) which is seen in Rakta. Increased serum uric acid levels (hyperuricemia or adhika mala bhaga) which results in many further diseases like gouty arthritis or vata rakta.

Hyperuricemia which is more closely related with our subject explains its pathology in two ways that is increased production and decreased excretion.

Increased production is mainly due to intake of purine rich food items such as madya, mamsa, lavana, amla katu kshara aharas which are almost similar to that of rakta pradushaka nidanas and it is also caused by the defect in enzymatic actions like Hypoxanthine guanine phosphorobosyl Transferase which can be compared to the agni concepts of metabolism of rasadi dhatus by various nyayas and enzymatic actions. Also the production of Serum Uric acid mainly takes place in the liver and intestine which are mainly the sites of pitta that is, Ranjaka pitta which helps in Rasa Ranjanam or metabolic activities. As Rakta dhatwantara happens, pitta also gets

deranged which results in the improper metabolism of serum uric acid eventually.

CONCLUSION

The prevalence of lifestyle disorders is raising rapidly and excessive purine diet and sedentary lifestyle are the causative factors for many diseases as elevated Serum levels of Uric acid play an important role in disease production. In *Vatarakta* almost all *Acharyas* explained *Virechana*, *Raktamoksha* and *Tiktaka Ksheera Basti* as the main choice of therapies.

ACKNOWLEDGEMENT

We acknowledge the Advanced Research Wing, RGUHS, Bangalore for the financial assistance to the clinical trial.

REFERENCES

- 1) Agnivesha, Charaka Samhita by Acharya vidyadhar shukla and prof. Ravidutt Tripathi, vol-II. Reprint 2015, Chaukhamba Surbharati Prakashan, Varanasi, shloka 15/5. page no 358
- 2) Agnivesha, Charaka Samhita by Acharya vidyadhar shukla and prof. Ravidutt Tripathi, vol-II. Reprint 2015, Chaukhamba Surbharati Prakashan, Varanasi, shloka 15/11. page no 360
- 3) Agnivesha, Charaka Samhita by Acharya vidyadhar shukla and prof. Ravidutt Tripathi, vol-II. Reprint 2015, Chaukhamba Surbharati Prakashan, Varanasi, shloka 15/15. page no 361

- 4)) Agnivesha,Charaka Samhita by Acharya Surbharati Prakashan,Varanasi,shloka
vidyadhar shukla and prof.Ravidutt 28/4.page no 427
Tripathi,vol-II.Reprint 2015,Chaukhamba
- 6)) Agnivesha,Charaka Samhita by Acharya
vidyadhar shukla and prof.Ravidutt
Tripathi,vol-II.Reprint 2015,Chaukhamba
- 5) Agnivesha,Charaka Samhita by Acharya Surbharati Prakashan,Varanasi,shloka
vidyadhar shukla and prof.Ravidutt 15/18.page no 364
Tripathi,vol-I.Reprint 2015,Chaukhamba

Cite this article as:

Prashanth A.S. Uric acid metabolisam: an Ayurvedic perspective, *J of Ayurveda and Hol Med*
(*JAHM*).2020; 8(5):27-33

Source of support: Nil

Conflict of interest: None Declared