

## BIRD'S EYE VIEW ON CONCEPT OF AMA

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### Abstract

Uniqueness makes special. The science of life is cluster of such uniqueness, includes the concept of agni (digestive fire) and ama (undigested food). Changes in dietary habits and emotional stress leads to hypo-secretion of digestive juices and diminished gastrointestinal motility. Most of the diseases are outcome of this only. Agni plays a major role in digestion of substance in the body tissue. If the agni is improperly processed during digestion and metabolism as a result undigested substance evolves in the form of ama. Ama initiates certain reaction inside the body, combines with dosha and dushya leading to genesis of disease. Direct influence of ama observed in diseases like amavata (Rheumatoid arthritis), vatarakta (gouty arthritis), grahani (Irritable bowel syndrome), kasa (cough), rajayakma (tuberculosis), pandu (anemia), kamala (jaundice), kushta (skin diseases) etc. Removing the cause of an imbalance is always one of the first steps in line of treatment. The treatment strategies require doing the distinction between the sama and nirama avastha (undigested food material and digested material stage respectively). The change in the constitution of ama will occur when the digestive power is increased either by medicine or by its own, this is pachyamanavastha (clear digestion). When the ama is fully digested it is pakvaavastha or niramaavastha (proper digestion). Thus the knowledge about ama helps in treatment process.

**Key words:** Ama; Agni; Free radicals.

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## INTRODUCTION

According to Ayurveda agni either kayagni / dhathuagni / bhutagni plays a major role in digestion of substance in the body tissue. If the agni is improperly processed during digestion and metabolism as a result undigested substance evolves in the form of ama. Ama initiates certain reaction inside the body, combines with dosha and dushya leading to genesis of disease. Removing the cause of an imbalance is always one of the first step in line of treatment. The treatment strategies require doing the distinction between the sama (indigestion) and nirama avastha (good digestion). The change in the constitution of ama will occur when the digestive power is increased either by medicine or by its own, this is pachyaman avastha (stage of digestion). When the ama is fully digested it is pakvaavastha or niramaavastha (Clear digestion). Thus the knowledge about ama helps in treatment process.

### Word meaning of Ama<sup>[1]</sup>

अम् + निच्

अम् - Dhathu

निच् - Prthyaya

Am –undigested, uncooked, unprocessed

### Definition

Because of decreased digestive fire the ahara (food) will not be digested properly and it will stay in the amashaya (small intestine) leads to the formation of many diseases.

Due to poor strength of agni the initial rasa dhathu (chime) becomes immature improperly metabolized and this unmetabolished substance still in the stomach is called ama.<sup>[2][3]</sup>

### Ama prakopa karana (Reason for ama)

Not following aharavidhi (rules of food intake), guru (heavy food), sheeta (cold nature food), shushka (dry nature food), vishtambi (causing indigestion), vidhahi (causing burning sensation), virudhaahara sevana (consuming incompatible foods). Not only these, emotional conditions like kama (lusture), kroda (anger), bhaya (afraid), shoka (worry), etc will lead to any disturbance in neurohormonal mechanism which causes hypo secretion of digestive juices and decreased motility of GIT.<sup>[4]</sup>

### Ama lakshana (Signs and symptoms of Ama)

Not properly metabolized, can be assimilated by the body, foul smell, sticky and circulates all over the body. Obstruction of srothas (channels), decreased bala (strength), heavy, laziness, no appetite, excess salivation, constipation, anorexia these are symptoms of ama and opposite are the symptoms of nirama.<sup>[5]</sup>

### Various forms of ama

- Anna rasa roopaama
- Mala sanchaya
- Doshasammurchana
- Pratamadoshadhusti

### Apakvaanna/ anna rasa roopajanya ama

The ingested food when improperly digested due to durbala (poor) of jataragni (digestive fire) gets accumulated in the amashaya. Direct influence of jataragimandhyam is seen in diseases like visuchika (cramps), athisara (diarhoea), grahani etc. Dalhana a critic of Susruta says that reduced digestive power causes production of undigested waste product. In obesity even though the digestive power is normal, there is production of undigested waste product.

Here the digestive power of fatty tissue is reduced. In sthoulyam (obesity) it has been mentioned that due to dhathuagnimandhyam the medhodhathu (fat) will not be converted to the next dhathu and accumulation of medhodhathu will occur which leads to the disease.<sup>[6]</sup>

### **Mala sanchaya**

The term mala sanchaya is used to designate ama. These are the metabolic waste products that are not properly eliminated by the body.

According to madhava nidana madhukosha commentary mala is of two sthoola (bulky) and sookshma (dry).<sup>[7]</sup> Attributes of the body are prasada and mala (faeces). Impurities that stick to the various orifices inside the body, which are of diverged forms, and are in the process of being removed from the body, putrefied tissue elements, vitiated vata, pitta, kapha and such other substances existing in the body also belong to them.

When a person takes more kapha and medhovritha ahara (fatty food). Medas and kapha will get increased and this increased medas will obstruct the srothas at medhodhathu level. Due to sorthorothamvayu (obstruction of channels) will get increased and it will enter in to the amashaya, there it will increase the jataragni, hence the person will take more food leading to further increase of apakvamedodhathu and medodhathuagnimandhya (undigested fatty foods) also will occur. Leading to sthoulyam. Here apakvamedodhathu is the mala.

In rajayakshma both jataragni and dhathuagnimandhya will be seen. Because of jataragni mandhya the rakthadhi dhathu (blood) will not be formed, leading to dhathu kshaya (depletion) and increased doshas. Because of this dhathukshaya and dosha prakopa dhathuagni mandhya will occur. Here the prakupitha vata pitta and sleshma can be taken as mala.

In madhumeha (diabetes) due to nidanasdoshaprakopa will occur and this doshas mix with medhodhathu they enter into the bastipradesha (hip region) and excreted out through the urine leading to madhumeha. Here prakupithavata pitta and kapha can be compared to mala.<sup>[8][9][10]</sup>

Any substances which are in increased quantity than the normal amount can be taken as ama. For example increased of urea, uric acid, ketone bodies, glucose etc

### **Hyperuricemia**

Increased amount of uric acid in the blood is called hyperuricemia.

In type one glycogen storage disease there will be deficiency of glucogen 6 phosphatase is seen, because of this the glycogen is not converted to glucose. So this glycogen 6 phosphate will get diverted to pentose phosphate pathway, leading to increased metabolism of purine to uric acid. When a person takes increased purine rich diet it may also lead to increased metabolism of purine to uric acid.<sup>[11]</sup>

### **Uremia**

Increased amount of urea in the blood is called uremia.

#### **Pre renal**

When there is increase protein metabolism, increased level of urea will be seen in the blood.

Because proteins are made up of amino acids, this amino acid is converted to ammonia and energy, and ammonia is converted to urea. In conditions like stress, fever and other debilitating.

## Renal

Due to any diseases of the kidney. For example chronic glomerular nephritis, tubular necrosis etc.

## Post renal

Due to any obstruction at the level of urethra urinary bladder etc can cause uremia, because urea will be excreted by the kidneys along with urine. If any defect in kidneys etc leads to increase level of urea in the blood.<sup>[11]</sup>

## Methemoglobinemia

Increased level of methemoglobin in the blood. Methemoglobin is a derivative of hemoglobin. Normally hemoglobin contains iron part and globin part, in methemoglobin this iron part will be in ferric state rather than ferrous state, so that it can't carry oxygen leading to the hypoxia of the tissues and even death can occur. While unloading oxygen to the tissues methemoglobin will be produced when it exceeds the normal level it is called methemoglobinemia.<sup>[11]</sup>

## Pradhamadoshadhusti

Sanchaya is the normal increase of dosha this is the initial doshic vitiation. Instead of free circulation as in its normal state if it disturbs the jataragni, formation of ama will occur.

According to Acharya Susrutha, prathama doshadushti is sanchayavastha where the dosha gets accumulated at their own sthana. (Sushruta Samhita, Sutra sthana, 21/18)

The increased doshas fill the sthanas enter into koshta. This leads to the stage of prakopa avastha. The doshas further vitiate the above and cause diseases.

## Dosha sammurchana

Every dosha has certain qualities which are antagonistic to each other; this equilibrium is compatible with the normal functions of doshas. This unique coexistence has been compared to the existence of fatal poison in a serpent without harming it. Sometimes this equilibrium gets disturbed by excessively aggravated doshas. When vitiated doshas combine each other, they produce interaction between them in such condition these opposite qualities instead of nullifying each other, interact and produce a toxic substances (i.e.) ama.<sup>[12]</sup>

Vagbhata has given a simile that when the millet kodrava (*Paspalum scrobiculatum* L.) and water are kept together for a long time an interaction takes place forming a toxic substance.

This concept has close resemblance with the concept of autoimmunity in modern. The major histocompatibility complex determined by human leukocyte antigen marks the surface proteins of the body cells, this helps to determine the self antigens from the non self. When this mechanism fails our own immune system starts secreting antibodies against bodies self proteins, producing fatal diseases. This is called autoimmunity, one among them is rheumatoid arthritis.<sup>[11]</sup>

## Free radicals

Diabetes mellitus is a wide spread and devastating disease. Diabetes is associated with several forms of tissue damage and oxidative stress is one among them. Hyperglycemia results in over production of oxygen free radicals which contributes to the progression of the disease. Reactive oxygen species are highly reactive molecules containing oxygen.

Oxidative stress represents an imbalance between this ROS and the biological system ability to readily detoxify the reactive intermediates a part of the free radicals. These free radicals attack the islets of langerhans cell of pancreas leading to the formation of diabetes mellitus.<sup>[13]</sup>

Free radicals are atoms or molecules containing one or more unpaired electrons in its outer orbit. They are highly reactive species and have the tendency either to lose an electron or to gain an electron.

| Ama                                          | Free radicals                                                                                |
|----------------------------------------------|----------------------------------------------------------------------------------------------|
| अविपक्वम् (Avipakvam)                        | Free radicals exists in an incomplete metabolic state same as ama .                          |
| असंयुक्तम् (Asamyuktham)                     | When produced free radicals are inassimilable to body.                                       |
| दुर्गन्धम् (Durgandham)                      | Free radicals cause cell destruction. This destruction leads to putrefaction and foul smell. |
| बहुपिच्छिलम् (Bahupichilam)                  | It sticks to normal healthy tissue very quickly.                                             |
| सदनंसर्वगात्राणाम्<br>(Sadanmsarvagaathanam) | Free radicals circulate all over the body and attack the normal cells.                       |

### Derivatives of ama

#### साम (Sama)

When ama comes in contact with dosha and dushya leads to sama condition.

#### Sama Nirama Dosha Lakshana

|       | साम                                                                                                                    | निराम                                                                         |
|-------|------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| वात   | विबन्ध, अग्निसाद, तन्द्रा<br>आन्त्रकृजन, वेदना, शोथ,<br>निस्तोद<br>Aggravates with → स्नेह,<br>प्रातःकाल, मेघागम, निशि | विशुद्ध, रुक्ष, निर्विबन्ध,<br>अल्पवेदना<br>शमन with स्नेह                    |
| पित्त | दुर्गन्ध, हरीत, श्याव, अम्ल,<br>घनं, गुरु, अम्लीका, कण्ठ<br>हृद् दाहि                                                  | आताम पीत, अत्युष्णं,<br>कटुरस, अस्थिर, पक्वं,<br>विगन्धि, रोचन, पाचन,<br>बल्य |
| कफ    | आविल, तन्तुल, स्त्यानः<br>कण्ठोपलेप, दुर्गन्ध,<br>क्षुधानाश, उदगारनाश                                                  | फेनिल, पिण्डित, पाण्डु,<br>निःसार, छेदक, मुखशोधक                              |

### Sama Dhatu Vikara (Charaka Samhita, Sutrasthana, 28)

| Sama rasaja                                       | Sama raktaja                                                          | Sama mamsaja                                              | Sama medaja                                         | Sama asthi                                                    | Sama majja                    | Sama shukra                      |
|---------------------------------------------------|-----------------------------------------------------------------------|-----------------------------------------------------------|-----------------------------------------------------|---------------------------------------------------------------|-------------------------------|----------------------------------|
| Iwara, Aruchi, Anga marda, Pandu, Klaibya, Tandra | Guda paka, Mukha paka, Rakta-pitta, Vata rakta, Indra-Lupta, Vidradhi | Gandamala, Mamsakeela, Adhimamsa Arbuda, Alaji, Upajhvika | Prameha, Nidra, Tandra, Daha, Ashta nindita purusha | Asthi shoola, Asthi bheda, Dartashool, Dartabheda Nakha dosha | Bhrama, Murcha, Tamo darshana | Klaibya, Garbha srava, Aharshana |

#### Vishuchika

Due to increased vata and other doshas different types of pain will be produced.

#### Alaska

Undigested food and vitiated dosha does not get expelled through upper and lower tracts .

#### Amavisha

When a person with ama takes further more amaprakopakaaharaama will stay in the amashayaans it will become sukthabhava that is amlatva which is called amavisha .this is mahagoram and asadhya.<sup>[14]</sup>

#### Krimi visha<sup>[12]</sup>

Recent research works have included krimivisha or krimidosha (worms) terminologies under the shelter of ama. Where these are the exotoxin and endotoxin or simply the toxic substances, produced by the pathogenic organism during the process of infection.

#### CONCLUSION

Ama the undigested food material is also one of the root causes of nearly all the diseases. Sama is a condition manifest due to amalgamation of dosha and dushya resulting in various kinds of disorders. Ama, amadosha and amavisha plays an important role in the pathogenesis as well as prognosis of the disease. A miraculous result can be provided after accessing the ama and nirama stage of the disease in depth. The hypo secreted juices or the metabolic byproducts which are accumulated will share the similarities with the different forms of ama produced at different level of the body. Free radicals can be regarded under the category of ama and ama comprises within itself a group of many such other harmful biochemical entities, of which free radicals are of a part only.

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