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## AMA AND ITS PATHOGENOCITY

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**Abstract:** The main factor for the formation of ama is deranged functions of agnis. Ama develops inside the amashaya. If it remains for longer duration in amshaya in due course of time, it attains suktatva, which is termed as amapradosha or amavisha. Fermentation may relate to the starch or carbohydrate inside the body, which may develop foul odour and extreme pastiness with increased mucous. Ama, atnadosha and amavisha play a vital role in the pathogenesis as well as prognosis of diseases. Certain chemical compounds in the body does damage which accumulates to produce ageing are called free radicals. This may be considered as ama. Abnormal increase in the normal values of blood, urine, stool, semen, sputum, cerebrospinal fluid, salivary juice. Etc. may be understood as ama condition. If ama manifests in excess body tries to eliminate either through upper channels or through lower channels or with both by manifesting acute condition. Direct influence of ama observed in amavata, vatarakta, grahanidosha, kasa, rajavakshma, pandu, kamala, kushtha etc. Ama acts as an exogenous antigen by virtue of its protein and bacterial floral contents. Ama acts as an antigen and possesses the potency to induce immunological reaction in a susceptible individual. Ama can also be generated within the body (endogenous ama) by virtue of excessively vitiated dosas (autoimmune).

**Key words:** Ama, amavisha, amavata, dosas.

**Introduction:** The term Ama refers to raw, unripe, unprocessed or maldigested condition of food substances due to the result of Agni mandata (i.e. weakness of digestive power). According to Ayurvedic viewpoint, Mandagni the main causative seat for large number of diseases as described. Ama Rasa and Ama Anna (Anna Visha) are the two states of Ama, which results due to impairment of Kayagni. Both stages are pathogenic and give rise to a number of gastrointestinal (Ajirna, Visuchika, Vilambika, Alasaka, Jwara, Atisara, Pravahika, considered under Anna Visa Janya Vyadhis) and other disorders related to systemic like Grahani Dosa. Udararoga mainly Jalodora, Prameha, Pandu and Amavata etc. According to Vagbhatta Ama as a pathological entity is formed due to hypofunctioning of Ushma (Agni)<sup>[1]</sup> as a result of it the Rasa and Rasa dathu are not properly formed, instead the Apakwa Anna rasa is collected in the Amashaya and there it undergoes fermentation followed by putrefaction. This very state of Apakwa Anna rasa is termed as Ama.

Sharangdhara views Samyak Pakwaahara as Rasa and Apakwa Ahara as Ama<sup>[2]</sup>.

Chakrapani comments Suktabhava as Amlatwa<sup>[3]</sup> While considering the above facts, production of Ama can be depicted as follows. The dietic indiscretions and emotional stresses impair the proper functioning of the neurohumoral mechanism responsible for ensuring proper secretion of digestive juices. The consequence of this hyposecretion of digestive juices and sluggish gastrointestinal motility leads to fermentation (Sukhatwa). The production of foul odour i.e. Durgandhatwa and extreme pastiness i.e. Bahupicchilatwa of Ahara rasa. The process of fermentation is most probably due to starch, carbohydrate components present in Ahara and the foul odour, and pastiness is probably due to petrification of the protein components. Therefore, the outcome of these changes attains toxicity in body and thus can be compared to Amavisa.

**Characteristic of Ama (Bio-physical Properties of Ama):** Vijayaraksita in his Madhukosa commentary on MadhavaNidana

(AmavataNidanam) and Arunadutta in his commentary on Astanga Hridaya<sup>[4]</sup> have very nicely described the following characteristic of Ama. Gurutvam (having high specific gravity); Dravatvam (liquid in nature); Nana Varnaiwam (having different colours); Tantumatvam (having sticky property); Asamyuktam (non-homogenous or unmasked); Snigdhatvam (having oily consistency or moist); Durgandathatvarn (foul smelling); Picchilatvam (stickyness).

**Production of Ama at Different Biological Levels:** Ama is produced at three different levels: Jathargni level (GIT level); Dhatvagni level (tissue level) and Bhutagni level (Molecular level). Dalhana in his commentary on SusrutaSamhita have narrated that the formation of Ama is not merely by Jatharagnimandyata, instead it can also occur due to impairment of Dhatwagni Vyapara<sup>[5]</sup>.

**Ama at the Systemic Level:** Ama in the form of apak'aanna rasa enters the systemic circulation, which is not suitable for either DhatwagniPaka, or BhutagniPaka because of its initial Apakwata in its nature becomes a Vijatiyadravya (i.e. foreign body) for the body because of its macromolecular size. Further, it vitiates the Doshas present in the body to cause different kinds of disorders depending on the severity and site of its location. Ama is a very hazardous substance being macromolecular in size causes obstruction to the micro channels (Srotoavarodha / Khavaigunya) by macromolecule it thereby means that Ama Rasa being bigger than the size of normally absorbable micromolecules.

**Production of Ama as Biological Entity:** The main factor for the formation of ama is deranged jatharagni. As a result apakwaannarasa remains inside the gastrointestinal tract specially amashaya. If it remains inside the amashaya for a longer duration, in due course apakwaanna rasa attains suktatwa. which is termed as arnavisha. The effects of apakwaahara rasa depends on the attainment of the degree of suktabhava. which decides the prognosis of the disease. Chakrapani in his commentary clarifies suktabhava as amlatwa<sup>[6]</sup>.

Disturbed gastro-intestinal functions is followed by metabolic disturbances, which may latter arise either due to toxic states or mal-nutritional states initially it may create acute conditions and in due course of time it may convert to chronic nature. This state may be referred as Sama state; the term mala sanchaya may be used to designate ama and Sama. The word mala has two implications i.e. Egest and

the by-products of metabolism i.e. metabolic—waste- products i.e. malas not properly eliminated or utilized by the body; Whenama manifests inside the gastrointestinal tracts leads to the formation of the following acute conditions namely Ajirna, Vistabdha, Vidagdha. Visuchika and Alasaka & Vilambhika, Jwara, Atisara, Pravahika etc; If the fails to eliminate the generated ama then it act as a carrier for chronic diseases to manifest by altering bodies normal neurohormonal mechanisms. Namely Grahanidosha, Udararogas, Shotha, Pandu, Prameha, Kamala, Arnava, Vatarakta.

**Common Signs and Symptoms of Ama:** Srotoavarodha (Obstruction to micro channels), Balabhramsa (Reduction in physical strength), Gaurava (Heaviness in body) AnilaMudhata (fiatulence) Alasya (Lethargy), Apakti (Indigestion), Nistiva (Expectoration), Malasanga (Constipation), Aruchi (Loss of taste) and Klama (Easy fatigability)<sup>[7]</sup>.

**Antigenicity of Ama:** Antigens are of two types and these causes immune complex mediated tissue injuries. Endogenous antigen: These are components of blood (antigens in cells/tissues); exogenous antigens: Infective organisms like bacteria, virus, fungiparasites, drugs and chemicals along with food (Ahar). Due to low function of Agni (hypofunction) or due to mandagniAma is produced. Ama can be also produced due to consumption of Viruddhaahara (as an exogenous source). Vagbhata first mentioned that Ama is formed internally without the involvement of Agni and Ahara, according to him, excessively vitiated dosas may combine to form Ama inside the body (endogenous production of Ama)<sup>[8]</sup>. Thus, the Ama produced due to exogenous and endogenous sources becomes unwholesome to the body and can be depicted as an antigen which is very much capable for inducing immunological reaction in body. According to Ayurveda fate of Ama biologically is a mixture of undigested protein, fat, carbohydrate and some type of bacterial form.

**Discussion:** Ama and amavisha are two different stages decide the virulence of pathogenesis. If treatment employed during ama stagedisease will be cured easily but on the contrary if disease attains amavisha stage leading to development of acute and chronic disease manifestations inside the body. When kapha combines with ama, it loses its normal functions as result kaphaand ojas fails to perform their normal functions, which leads to development of various disorders

inside the body. Tolerogen is an antigen that invokes a specific immune non-responsiveness due to its molecular form. If its molecular form is changed a tolerogen can become an immunogen. Which is capable of eliciting (inducing) an immune response. An immunogen usually has a fairly high molecular weight (usually greater than 10,000), thus, a variety of macromolecules such as proteins, lipoproteins, polysaccharides, some nucleic acids, and certain of the teichoic acids, can act as immunogens. Antigens that are generated within the cells of the body. An antigen may also be formed within the body, as with bacterial toxins or tissue cells. Therefore its absorption becomes sluggish and it gets retained in the intestine for a longer time. Due to this retention, it becomes fermented or even putrefied.

This toxic product remains unabsorbed in the intestine because of its incomplete digestion and it is the root cause of all diseases<sup>[9]</sup>. Dhatu-agnimandya- (Low tissue fire) plays an important role in the process of formation of tissues from the nutrient substances (of the particular dhatu). Hence, when the power of the tissue fire of a particular tissue is diminished, either in the liver or in a particular channel, the formation or utilization of that tissue becomes incomplete and ama is produced. Such tissues containing ama are called Sarna tissues-tissues with ama. Thus this type of pathology is seen in various diseases.

**Conclusion:** The main factor for the formation of ama is deranged functions of agnis. Ama develops inside the amashaya. If it remains for longer duration in amshaya in due course of time, it attains suktatvawhich is termed as amapradosha or amavisha. The hazardous effects of ama depend on the attainment of the degree of suktabhava, which decides the prognosis of diseases. Cakrapani clarified suktabhava as amlatva. Fermentation may relate to the starch or carbohydrate inside the body, which may develop foul odour and extreme pastiness with increased mucous. Ama, amadosha and amavisha play a vital role in the pathogenesis as well as prognosis of diseases. Certain chemical compounds in the body does damage, which accumulates to produce ageing, are called free radicals. This may be considered as ama. Abnormal increase in the normal values of blood, urine, stool, semen, sputum. Cerebrospinal fluid, salivary juice. etc may be understood as ama condition. If ama manifests in excess body tries

to eliminate either through upper channels or through lower channels or with both by manifesting acute condition. Direct influence of ama observed in amavata, vatarakta, grahanidosha, kasa, rajavakshina, pandu, kamala, kustha etc. Ama acts as an exogenous antigen by virtue of its protein and bacterial floral contents. Ama acts as an antigen and possesses the potency to induce immunological reaction in a susceptible individual. Ama can also be generated within the body' (endogenous ama) by virtue of excessively vitiated dosas (autoimmune).

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