

A LITERAL REVIEW ON THE ESTABLISHMENT OF 'AMA ASSESSMENT CRITERIA' AS A GREAT DIAGNOSTIC TOOL IN VARIOUS DISEASES

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ABSTRACT

Ama is a peculiar concept in *Ayurveda*. *Ama* is considered as an undigested or partially digested or partially metabolized substance which requires further transformation and if retained as such, it may produce obstruction in the micro and macro channels of the body, which ultimately creates the condition of *srotovaigunya*. Nearly all diseases as per the Ayurvedic view have their origin from *ama dosha*. Therefore it is very important to evaluate *ama dosha* for every Ayurvedic physician who wants to be a good clinician. *Ama dosha* can be evaluated by the help of a questionnaire which is prepared on the basis of general symptoms of *ama dosha*.

Keywords: *Ama dosha*, evaluate, general symptoms, *srotovaigunya*, questionnaire

INTRODUCTION

According to *ayurvediya* principles, *ahara* and *jatharagni* are the most important for all the biological activities or a living body. Living body is an end result of food while diseases are end results of unwholesome diet.¹

All diseases are due to hypo functioning of *agni*.² *Agni* is a coin; health and diseases being its two sides. *Jatharagni* nourishes the body tissues etc. through *ahara-rasa*. If this is one side of the coin, then what is the other side? If on one side *ahara-rasa* plays a role in the maintenance of health then what factor on the other side plays a role in the pathogenesis of the diseases. What is the hidden link between *agni*

and the diseases? It is here only that the crucial role *ama* plays unveils. Such is an integral role *ama* plays in the pathogenesis of diseases that disease in general sense is also known as '*amaya*'.^{3,4}

It is quoted in *Rigveda & Yajurveda* that one who destroys *rakshasa* (krimi/microbes) and *ama* is known as *bhishak* (physician).

In *ayurveda*, *ama* is considered to be responsible for the production of all types of internal diseases. Even diseases caused by external agents are actually manifested only when there is production of *ama* and subsequent vitiation of *agni* which is present in that locality.

What is Ama?

The word *ama* indicates that which undergone slight *paka* (digestion).

Ama word has got mean of *ishat paka* (undergo slight *paka*), *asiddha* (not attained its final form), *paka rahit* (not at all under gone *paka*), *apakvam* (partially cooked), *vyasththam* (improperly cooked). So; *ama* can be defined as a substance which is involved in the process of *paka* without attaining its final form.

1. *Ama* has been defined as a condition in which the first *dhatu* namely *rasa* is not properly formed due to the lowered strength of *agni*.⁵
2. According to some authorities as quoted by *vagbhata*, the impaired *vatadi doshas* become mixed up with one another leading to the formation of *ama dosha* very much like the production of the toxin from the spoiled *kodrava*.⁶
3. The undigested food resulted from various causes of *mandagni* attain fermentation (*shuktatva*) leading to the set of toxic states called *ama visha*.⁷
4. *Sushruta* opines that wound until it gets *paripakva* state is called *ama* condition temporarily.⁸
5. *Vijayarakshita* has cited a number of definitions and descriptions of *ama* obviously quoting various contemporaries as follows⁹-
 - a. The food which is not properly digested and is stagnated, then the outcome of such digestion is known as *ama*.
 - b. The *ama-rasa* which is not properly formed in the *amashaya* due to the impairment of *kayagni* is known as *ama*.
 - c. The undigested *ama-rasa* possessing foul odour and is highly viscous deprives the body of its nutrition and in consequence

causes *sadana* (fatigue) etc. is known as *ama*.

- d. Imperfectly digested intestinal contents are known as *ama* i.e. if *anna rasa* is not properly digested and formed then the outcome of such a digestion is known as *ama*.
- e. Due to impaired *jatharagni*, residual of *ahara-rasa* is still left behind undigested towards the end of digestion (*rasasheshi*); it is then known as *ama*, which is the root cause of all the diseases.
- f. The food which is not properly digested is *ama*.
- g. The accumulation of *mala* in body is known as *ama*.
- h. The stage of first *dosha-dushti* is *ama*.

Ama-dosha settles in which particular part of the body, there influenced by *vatadi dosha* produce disease represented by various symptoms of *vatadi dosha* and syndromes by *ama* like *apakva*, *alaska*, *amavata* etc.¹⁰ On analysis of all the definitions coined by the various authors, it can be said that *ama* is a stage/condition of a substance resulted in the process of *paka* on subjecting to the *agni* before attaining its final transformation.¹¹

Final transformation; in the sense, the ingested material to be transformed either to yield energy in the body (for *dhatu-vyapara*) or for the synthesis of new tissues (for *dhatu-nirmana*) and final elimination as end products. Once the substance attains the target state it is not called as *ama*. Simply it can be said that-*ama* is the precursor state of a substance in transformation. *Ama* condition can be formed at any level of *agni san-nikarsha* due to its hypo functioning, may be at *jatharagni*, *dhatvagni* and *bhutagni*.¹²

After going through all the definitions above three words emerge *ama*, *ama-dosha* and *ama-visha*. Though all the three convey same meaning, these words are coined for different states of *apakva dravya*. The *apakva ahara rasa* which is situated in *amashaya* gets *shuktatva* after passage of some time. That *shukta bhava* of *apakva ahara rasa* is called *ama*. During further course of the time, *ama* interacts with *dosha* and become pathogenic which is known as *ama dosha*.¹³

The *ama dosha* on further stasis gets more *shuktatva* thereby attains and acquires *visha* qualities. This toxic condition is known as *ama-visha*.^{14, 15} In the mode of causing disorders, clinical features and principles of treatment are also distinctly different for each condition. Hence *ama*, *ama dosha* and *ama-visha* terms are distinct, indicating the actual state of *ama*.

Nidana of Ama

Ama results due to disturbance in *agni*. So any factor which disturbs *agni* directly or indirectly is the cause for the production of *ama*. Out of three pathological conditions of *agni*; except *tiksnagni* the remaining two; *mandagni* and *visamagni* are the prime causes of the *ama*, but ultimately it is the *mandagni*.

Etiological factors of *ama* described in various texts are summarized and classified as follows –

1. Direct factors^{16,17,18}
2. Indirect factors

Direct factors are those which directly influence *agni* leading to *mandagni* and then formation of *ama* while indirect factors are the causes which trigger *dosha* first, thereby affecting the *agni* leading *mandagni* and then *ama* formation. Similarly the factors

which play role in the manifestation of certain disorders in turn leading to *ama* formation are also to be considered.

Swaroopa of Ama

Though *ama* may originate at various levels in different structures, it possesses certain inherent qualities-

1. *Drava*, 2. *Guru* 3. *Snigdha* 4. *Pichchila* 5. *Tantual* 6. *Avipakva* 7. *Asanyukta* 8. *Daurgandh*, 9. *Abhisyandi* 10. *Srotoavarodha* 11. *Katu- Amla Rasa*, 12. *Shuktata*

The colour of *ama* as described by *vagabhata*, *aneka varna* may be due to the substances under process and the tissue involved.¹⁹

Ama guna described above may be seen not only at gastro intestinal level but also at tissue level and in yielding energy (catabolism) and in synthesis (anabolism). All *vijatiya dravya* (exogenous substances) must undergo *paka* (transformation) and become *sajatiya* (endogenous) either to yield energy or to synthesize tissues. In such a process, any substance gets stasis at any stage in any form is called *ama*.

Thus an undigested food particle, bacteria, virus, intermediary metabolic end products, accumulated substances in metabolic rearrangements and synthesis, free radicals, foreign substances (antigens) come under the panorama of *ama*.

Formation of Ama at different levels

Ama formation takes place broadly at three levels namely *jatharagni*, *bhautagni* and *dhatvagni* level due to their hypo functional state. There are multiple factors in the production of *ama* yet the compulsory inevitable intermediary factor is *mandagni*, Hence, *ama* may form at all the *tryo-dashagni* levels.

It is seen that *dalhana* and *chakra-pani*; in their commentaries on *shushruta sutra 15/35* have stated that the formation of *ama* need not necessarily be due to *jatharagnimandya* only. It may also occur due to impairment of *dhatvagni vyapara*. It is also seen from 'atankadarpana' commentary of *madhava nidana* that *ama dosha* may be caused due to *dhatvagni* and *bhutagni* on account of which *shosha*, *vrana*, *vidradhi* and such other diseases may be caused.²⁰

At *jatharagni* level

Ama appears to be identified at eight levels in *ahara parinama* due to *jatharagnimandya*.²¹

1. *Apakva ahara* in *amashaya*.
2. *Apakva ahara rasa* in *amashaya*.
3. *Rasasheshi* in *amashaya*.
4. *Ahara rasa + dosha*.
5. *Apakva mala* in *annavaha srotas*.
6. *Addhya dhatu* resulting out of *apakva ahara rasa*.
7. Circulating *apakva rasa dhatu*.
8. Transformation of the *apakva rasa dhatu* to *uttarottara dhatu*.

At *bhutagni* level

The *ama rasa* which has not crossed intestinal villi is known as *sthula ama rasa* while *ama rasa* which crosses them and enter the circulation is known as *sukshma ama-rasa*. This attains the micro molecular size but not attain the ultimate size physiologically. This; when subjected to *bhutagni*, brings down the acuteness of *bhutagni* due to its *gurvadi gunah*. In this state *vijatiya ahara rasa* will not be able to turn as *sajatiya* due to *bhutagni mandya*; and hence rejected by body tissues. This acts as antigen. These *sukshma ama-rasa* molecules like foreign proteins i.e. undigested proteins, bacteria etc. which enter through the GIT

into the circulation and behave like antigens. This antigen in the circulation is pathogenic which can be called as *sukshma ama rasa*. This circulating *sukshma ama rasa* vitiates *vatadi dosha* by its guru, *abhisyandi* etc. *gunah* and manifests various diseases according to the existing *srotovaigunaya*.²²

So any substance which remain stable without any *paka* or remain in as residual or as a by product without attaining its finality in the metabolism can be called as *ama* such as pyruvic acid, lactic acid, ketones etc. Diseases like *madhumeha*, *udara*, *vatarakta*, *raktapitta*, *kshaya*, *amavata* and several other disorders are due to hypo function of *bhutagni*.

Radical is a group of atoms which enters and goes out of the chemical combination without undergoing any change in the configuration. This definition obviously denotes radical is an *ama* particle in circulation (at *bhutagni* level). When this particle allows a reaction with molecular O₂ it becomes peroxide radical i.e. *vidagadhakara paramanu* known as free radical, which reacts at random by hydrogen obstruction and a variety of additional reactions to damage protein, other lipids and vitamins particularly vitamin A. These *ama* particles are resultant of *bhutagnimandya*. Since these particles; do not change its configuration thereby not accepted by any *dhatu* in the process of metabolism.

At *dhatvagni* level

When circulating *ahararasa* is in *ama* condition (*sukshma-ama*), the tissues in body are not able to utilize it. Since, it is heave to respective *dhatvagni* whereby leading to *dhatvagnimandya* and subsequent *ama* state in that *dhatu*.

Since, *dhatvagnimandyata* is prevailing; synthesis of new tissues is not possible. Incompletely or partially metabolized substance will become toxic leading to condition called as metabolic cyto-toxic anoxia, which is similar to that of *ama-visha*.

If enzymatic action is poor, the production will be more of *mala bhaga* than of *sara bhaga*. Hence, production of *dhatu-mala* increases causing more *mala-sanga* thereby manifestation of diseases.

During Krebs cycle, carbohydrates, proteins and fats end in pyruvic acid, acetic acid and ketoacid respectively. In case these substances are produced more and get accumulated in the tissues resulting in various pathological disorders, similar to that of *ama*.²³

Since each *dhatu* has got its own structure and specificity because of its own *agni*, hence due to hypo function of them there is possibility of *ama* production at each *dhatu* level. This *ama* causes pathogenicity at each *dhatu* level according to its *agni-mandyata*. On going into detail there are several disorders due to *dhatvagnimandyata* which are to be classified as *ama roga* and treated as *ama-janitaroga*. All hormonal, enzymatic deficiencies are to be *ama-janitaroga* at respective *dhatvagni* due to its hypo functioning.

The hormones like ACTH, Thyroxine and other anabolic steroids are also to be considered as *kayagni-ansha*, which trigger *pachakagni-ansha* located in *dhatu*, though its effect is not linked directly to any specific *dhatu*. In such conditions, any hypo functioning of these hormones leads to the production of *ama* in its target tissues in the body.

Sama and nirama conditions-

Assessment of *sama* and *nirama* condition is the most important factor from the diagnosis and treatment point of view. For example if *sama* condition is existing, before instituting *shodhana* and *shamana* therapy *langhana*, *pachana*, and *dipana* are advocated, whereas, in *nirama* conditions we can proceed straightway with *shodhana* and *shamana* therapy.²⁴

Srotodushti

Khavaigunaya is an important factor in the establishment of *sama roga*. Out of four varieties of *srotovaigunaya*, *srotosanga* is the commonest factor in the manifestation of *sama roga*. *Srotosanga* is of 3 varieties.²⁵

1. Obstruction of channels (*srotasa*) by antigens or by thromboembolic phenomenon mostly due to *guru*, *tanu*, *avipakva*, *asanyukta guna*.
2. (a) Due to inhibition of impulses by vitiated *vata*, suddenly there will not be any movement in the tissues resulting in the arrest in the movement of cilia, villi etc and final movement of musculature leading to blockage or *srotosanga*.
(b) Vitiating *vata* can also cause *srotosankocha* (spasm of the vessel walls) leading to sudden closure of channels i.e. *srotosanga*.
3. *Srotosanga* due to pressure from extra vascular conditions.

Whenever *ama* condition exists, *mala vriddhi* takes place due to *mandagni*. This *mala vriddhi* cause *srotoavarodha* thereby *sama roga*. So it can be concluded that *srotosanga* in *sama roga* is due to *Ama & Mala vriddhi*.

Dosha dushti

Wherever *ama* is present; it triggers the *dosha* through its various properties. *Drava*, *guru*, *snigdha*, *pichchila guna* of

ama increase their moieties in the *pitta*, *kapha* and *rasadi dhatus*. Whereas, *avipakava*, *asanyukta guna* cause *mala-mutra vridhhi*. Hence they lose their natural properties and get vitiated. So, all these factors which are in *chayavastha* cause obstruction of the channels and subsequently vitiation of *vata*.

Apart from the above *tantumaya*, *abhishtyanda*, *avipakva* and *asanyukta guna* cause *srotoavarodha* (obstruction of channels) whereby disturbance of *vatanulomana* results in *udavarta* and *vataprakopaka* conditions. *Vata* moves the accumulated *dosha*, *dhatu* and *mala* into the circulation the body and settles according to *srotodushti* (i.e. *sthanasanshraya*) basing on the factors involved in the etiology and pathogenesis.²⁶

Hence, *sama roga* or involvement of *ama* are vivid and in wide range consisting of 80% of the diseases.

Clinical features of *sama* conditions

Sama condition is nothing but the stage of *sthanasansrya* in *shatakriyakala* whereas *sama-roga* is a *vyaktavastha*.

In *sama-roga* specific features of the diseases appear according to the *dosha-dushya* involvement and in *sama* conditions some common features will be present which are present in all *sama-roga* irrespective of their specific *dosha-dushya* involvement.

Clinical features mentioned in *sama* conditions indicate only *samavastha* irrespective of whether the condition passes to the next stage of *sama-roga* or not. Sometimes, these features may disappear with treatment without passing to the next stage. Hence these signs and symptoms are most important in indicating the pathogenic state as well as to guide the physician.

Features are described by *vagbhata* as²⁷

1. *Srotorodha*
2. *Balabhransha*
3. *Gaurava*
4. *Anilamudhata*
5. *Alasya*
6. *Apakti*
7. *Nisthivana*
8. *Mala sanga*
9. *Aruci*
10. *Klama*

Various symptoms produced due to presence of *ama* in body, are described in texts. These symptoms help in diagnosis of *ama* clinically. *Sama* and *nirama* stage of disease can also be identified with presence or absence of these symptoms.

On the basis of these symptoms a special questionnaire format was prepared to evaluate the level of *Ama*-

1. I often feel a sense of blockage in my body (constipated, congested in the head, sinus congestion and general lack of clarity or other). 0,1,2,3,4
2. In the morning when I wake up, I'm groggy; it takes me quite a while to feel really awake even after a good night sleep. 0,1,2,3,4
3. I tend to feel weak physically, for no reason that I can see. 0,1,2,3,4
4. I get colds (or similar conditions) several times each year. 0,1,2,3,4
5. My body tends to have a feeling of heaviness. 0,1,2,3,4
6. I just tend to feel that "something isn't working right" in the body (digestion, breathing, bowel movements or something else). 0,1,2,3,4
7. I tend to feel lazy and unenthusiastic (My capacity to work seems all right but I have no inclination). 0,1,2,3,4
8. I yawn after a main meal and just want to curl up and snooze. 0,1,2,3,4
9. I commonly have indigestion. 0,1,2,3,4

10. I often have to spit or need to cough regularly. 0,1,2,3,4
 11. I have a general sense of malaise with vague aches and pains. 0,1,2,3,4
 12. I experience abdominal bloating and gas especially after a main meal 0,1,2,3,4
 13. Ofen, I just don't have a taste for food. I have no appetite or hunger. 0,1,2,3,4
 14. I feel tired and lethargic even exhausted all day long, even though I eat well and sleep well. 0,1,2,3,4
 15. I feel lack of mental clarity, energy and general lack of motivation or zest for life 0, 1,2,3,4
- ♣ Add up your scores to arrive at a rating for your level of *Ama*-

Absent	-	0
Mild	-	01-15
Moderate	-	16-30
Severe	-	31-45
Agonizing	-	46-60

CONCLUSION

According to Acharya Vagbhata derailment of *Agni* is seen in almost all the diseases.²⁸ *Ama* is an important factor in the initiation of disease. *Dohsas*, *dhatus* and *malas* are the basic components of the body. When these components of body remain in equilibrium healthy state of body is maintained. When these *doshas*, *dushyas* or *malas* come in contact of *ama* they produce diseases. Status of *Ama* of a person is itself an indicator of good or bad health and it is the main cause in the manifestation of the disease. On the basis of general symptoms of sama dosha as described by the Acharya

Vagbhata a questionnaire was prepared. So; by the help of this 'Ama assessment criteria' one can assess the extent of involvement of ama dosha in various diseases. Every physician should consider *Ama* as an important pathogenic factor during deciding management.

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