

**CONCEPT OF “AMA DOSHA” WSR TO FREE RADICALS**

Munish Kumar*, Parvesh Kumar

Department of Agadtantra, Uttaranchal Ayurvedic College, 17, Old Mussoorie Road,
Rajpur, Dehradun, Uttarakhand**Article Information**Received: 11th Aug 2016Revised: 25th Aug 2016Accepted: 07th Sept 2016**Keywords***Ama, Jatharagni, Free radicals.***ABSTRACT**

Ama is considered as root cause of all diseases in the body. It has tremendous capacity to vitiate the *Doshas* and disturbing the homeostasis (*Dhatusamyā*). *Ama* is the result of improper digestion or partially digestion of the food particle due to hypo function of *Jatharagni* and also due to accumulation of *mala* in the body. In modern physiology, *Ama* can be correlated with deadly Free radicals. Free radicals are atoms, ions or molecules that contain one or more unpaired electron, which requires neutralization by free radical scavengers. The majority of free radicals that damage biological systems are oxygen free radicals, and these are known as “Reactive oxygen species”. Thus it exists in incomplete metabolic state which is also the state of *Ama* described as *Avipakam* (incompletely metabolized). This *Ama* is responsible for the production of various diseases. In the same way, free radicals are also found to be root cause of many diseases. The aim of present article is to understand the concept of *Ama* as well as free radicals as a root cause of diseases and its treatment.

INTRODUCTION

The term “*Ama*” ordinarily means unripe, uncooked, undigested substance. It is produced from the impaired function of *Kayagni*. It is toxic substance of gastro enteric origin. All types of diseases in *Ayurvedic* view, for their origin from *Ama Dosha*. Vitiating of *Agni* and this malfunction of *Agni* produce *Ama*. As per *Ayurveda*, disease state is due to disturbance or deviation in the equilibrium of *Dosha-Dhatu-Mala*. The proper knowledge for correcting them cannot be obtained without understanding the in –depth pathology. *Ama* is an important factor in pathology of any disease. This concept resembles with contemporary concept of free radical theory.

AIMS AND OBJECTIVES

- ❖ To review the concept of *Ama* as per *Ayurvedic* classics.
- ❖ To review the role of Free radicals in or for the pathological condition of *Ama*.

DEFINITION OF “AMA”

According to different *Acharyas* various definition of *Ama* available in different classics. Some of them are given below:

1. Due to hypo functioning of *Agni* the first *Dhatu*-“*Rasa*” or chyle is not properly digested, instead the *Anna rasa* undergoes fermentation or putrefaction being retained in the *Amashaya*. This *Rasa* is called as *Ama*.^[1]
2. Due to *NidanaSevana* when *Agni* is vitiated it becomes incapable of digesting even less amount of the digestible food and this undigested food after getting fermented turns into poisonous substance.^[2]
3. The matter which has not undergone *Vipaka*, leading to *Durgandha*(bad smelling), which is large in quantity, which is *picchil*(sticky) and which leads to *Gatrasadana* is called *Ama*.^[3]

So the improperly digested *Rasa* is *Ama* (as per different classics) can be understood as:

- *Unprocessed food
- *Partially digested
- *Matter which requires further *Parinama*^[4]

*For Correspondence: munishs91@gmail.com

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ETIOLOGY OF AMA

It has been accepted by all *Acharyas* that etiological factors, which cause *Mandagni* are responsible for the production of *Ama* and *Agnimandya* are interdependent to each other. Following are the chief causative factors of *Ama* mentioned by *Acharya Charka* ^[5]

1. AHARA:

- *Abhojna*
- *Atibhojana*
- *Ajir nabhojana*
- *Asatmyabhojana*
- *Guru, Ruksha, Sushka, Vistambhi and Vidahibhojna etc.*
- *Vismasana*
- *Viruddhabhojna*

2. IATROGENIC CAUSES:

-Erroneous administration of *Virechana, Vamana, Sneha Karma*

3. VIHARA:

- *Vegaavidharana*
- *Divashayan*
- *Aalasya*

4. Manasika:

-Food consumption while afflicted with mental instability due to *Kama, Krodha, Lobha, Moha, Shoka*, etc.

5. Miscellaneous:

-Adverse *Desha, Kala, Ritu(Vaismya)*

DISEASES PRODUCTION BY AMA

Agni Dusti(Kayagni, Bhutagni, Dhatwagni)



Ama (Mixed with Dosha, Dushya and Mala)



Circulate in all Srotas and Kha-Vaigunya at particular site (Samavastha)



Vyadhi (Shakhaghata, Kosthagata, Marmasthidandhi)

SYMPTOMS PRODUCED DUE TO AMA^[6]

- *Srotorodha* (Obstruction in Channels)
- *Balabransha* (Lowering of immunity)
- *Gaurava* (Feeling of heaviness)

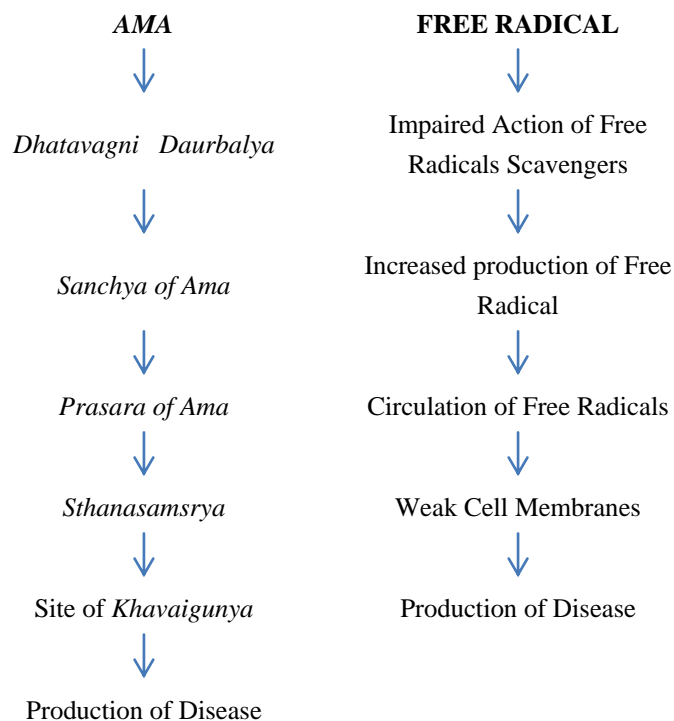
- *Alasya* (Unwillingness to perform of duties in spite of capability)
- *Apakti* (Indigestion)
- *Nishtiva* (Accumulation of excessive saliva in mouth)
- *Mala Sanga* (Constipation)
- *Aruchi* (non perception of taste)
- *Klama*
- *VitMutra, Nakha, Dhatu, Chakshupitata/ Raktata/ Krishnata*
- *Shiroruk* (Headache)
- *Mukhavairasya*
- *Jvara*(fever)
- *Atisara*(Lose motions)
- *Romharsa*

SIMILARITIES BETWEEN AMA AND FREE RADICAL IN PRODUCTION OF DISEASE

- ❖ According to *Susruta*, a disease is produced in six steps i.e. *Sanchaya, Prakopa, Prasara, Sthanasamsrya, Vyakti and Bhedadvstha*^[7]. In case of diseases produced by *Ama*, *Sanchaya* of *Ama* is first step. It happens due to impairment of *Agni* at that place. Similar is the case with free radicals. At certain site due to impairment in action of free radical scavengers, increased production of free radicals takes place. When this *Sanchaya* or accumulation is in small amount it does not cause any harmful effects, but if treatment is not given, this *Sanchaya* exceeds the threshold. Then it starts producing minimal symptoms, this is the state of *Prakopa*. After this state, *Ama* goes into circulation; same is the case with free radicals.
- ❖ Now this *Ama* requires a site for creating disease in form of *Khavaigunya*^[8], which should be considered as weakness in any body tissue where *Ama* may be *Sthanasamsrya*, or many adhere with this tissue or cells. In case of free radicals also, they look for a site, which is weak and can easily take part in electron exchange with them. Therefore depending upon this site of *Khavaigunya* different diseases are produced in different manner from same root cause, i.e. *Ama* or free radicals. This is the stage of *Sthanasamsrya*. Now symptoms of diseases become clear. All pathologies described in modern science are from this stage. In modern science, stages earlier to this are rarely considered. After this stage, pathology at gross level becomes visible. If even at this stage the disease is not

treated is not treated it leads to complications, which are described in *Ayurvedic* classics as *Updravas*.

- ❖ From above discussion, it becomes clear that the method of production of disease at its basic level is described in similar manner in modern as well as in *Ayurvedic* literature. The above mentioned process of pathogenesis can be presented in a flow chart as follows:



TREATMENT

Now the similarities between lines of treatment of two concepts shall be discussed. For *Ama* basically three types of procedures are required.^[9]

- ❖ First is the use of *Langhana* (Starvation) which helps in load shedding on *Agni* and production of *Ama* is decreased.
- ❖ Second is the use of *Deepanadravya*, which helps in improving status of *Angi* and enhancing its action.
- ❖ Next is *Pachana*, done with *Pachanadravyas*. *Pachanadravyas* help in digestion of already produced *Ama*.
- ❖ In protecting the body from free radical damage, antioxidant therapy is used which also acts in three ways, as already mentioned, these are:
 - ❖ First is by inhibiting the generation of reactive oxygen species. This can be achieved by removing causative factors and can be taken as *Langhana karma*.

- ❖ Second is by increasing the action of antioxidant enzymes like SOD or catalase. This is done by the use of certain drugs, which enhance the action of these coenzymes. In other words, this may be considered as *Deepana karma*. Third is the use of certain substances, which help in neutralizing free radicals by either donating or accepting electrons from free radicals. Many vitamins like vitamin C and vitamin E have such properties due to which they can take part in electron transfer reactions and can neutralize free radicals. This activity can be compared to *Pachana*. Therefore, similarity in the line of treatment of both concepts is also seen.

CONCLUSION

- ❖ Summing up the above explanation, it can be concluded that the main factor concerned in the formation of *Ama* is *Mandagni* (Hypo function of the digestive faculty of the body). Dietetic indiscretion and emotional stresses contribute to the formation of *Ama*. This may be due to the impaired effective functioning of the neuro-humoral mechanism responsible for the proper secretion of digestive juices. *Ama* is produced also due to the accumulation of byproduct of metabolism as well as metabolic waste not properly eliminated or utilized in the body. Here it is noteworthy that whenever there will be improper metabolism due to impaired functioning of *Agni*, then only *Ama* will be formed. In modern parlance, *Ama* may be referred to as free radicals, which are intermediately by product of metabolism, which have a tendency to block the micro channels of different systems of the body.
- ❖ This can be compared with the accumulation of lipofuscin, amyloid body, advanced glycation end product (AGE) and modified protein. This process is an outcome of the derivation of the main metabolic pathway in the direction to form defective metabolism end product. Increase in the normal value of the blood urea, sugar, uric acid etc. may be understood as *Ama* condition. The entire discussion concludes that various similarities between *Ama* and free radicals in terms of the general definition, properties, types, site of production, mechanism of producing diseases and the line of treatment of the two concepts, can be found.

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