REVIEW ARTICLE

CRITICAL ANALYSIS OF AMLA RASA AND ITS EFFECTS ON HUMAN BODY

AKSHAYKUMAR\(^1\) KEKUDA PRASHANTH\(^2\) KULKARNI PRATIBHA\(^3\) MISHRA BIHARI NILADRI\(^4\)

ABSTRACT

Ayurveda mainly concentrates on prevention and treatment of diseases, where in it gives more importance to food and nutrition. In Ayurveda Rasa concept is explained which is having 6 Rasa’s, Amlarasa is one among the Shad Rasa and each Rasa is having its own individual nutritive value. So the present study emphasizes on the physical properties of Amlarasa and its effects on the body when it is consumed in normal quantity and in excess quantity. In Ayurveda Rasa has been told in different contexts, here Rasa is taken as sense of taste which is perceived through Rasanendriya, Amala Rasa is predominant of Prithvi and Agni Bhutas. It is Vyavayi, Laghu and Snigdha. Mukhabodhana, Asyakanthavidaha, etc are the characters of Amla Rasa. Dantaharsha, Trishna, Akshinmilana, etc are the Atiyoga lakshanas of Amlarasa. Concept of Rasa is bases for the nutritional value of the food. Amla Rasa is a nutritive Rasa, it performs functions like Deepana, Pachana, Rochana, Hrudya etc. When consumed in excess, it may causes features like Bhrama, Pandu, etc. which are mostly related to Pitta and Raktha Vrudhi because of Agneya nature of Amla Rasa.

Keywords: Amlarasa, Mukhabodhana, Asyakanthavidaha, Trishna, Akshinmilana.

\(^{1,4}\) MD Scholar, Department of Kriya Shareera, Sri Dharmasthala Manjunatheshwara College of Ayurveda, Hassan (INDIA).

\(^{2,3}\) Professor, Department of Kriya Shareera, Sri Dharmasthala Manjunatheshwara College of Ayurveda, Hassan (INDIA).

Corresponding Author Email id: akshaykumar5800@gmail.com

Access this article online: akshaykumar5800@gmail.com www.jahm.in

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INTRODUCTION
The ancient science of life which is highly relevant to now days, *Ayurveda* gives lot of importance to nutrition in balanced way. It emphasizes the good effects as well as ill effects of all the things which interact with the body. Nutrition or food is considered to be one among the tri pallor’s supports the human life. The diet or nutrition in *Ayurveda* is based on the concept of *Rasa* or taste. The *Rasa* of the food substance determines its action on the body that is its effect on *Dosha-Dhatu-Mala* functioning and maintenance of wellbeing. The *Amla Rasa Dravya* (food substances with sour taste) are told to have many beneficial effects on the body and also can harm body when taken in excess. This paper highlights the effects of *Amla Rasa* and its harmful effects with the rationale behind these effects.

AIMS AND OBJECTIVES –
- To review physical properties of *Amla Rasa*.
- To review the effect of *Amla Rasa* when taken in normal or needed quantity.
- To review the effect of *Amla Rasa* when taken in excess quantity.

MATERIALS AND METHODS
*Rasa* - *Ayurveda* quotes that perception of taste is important and *Rasa* can be called as taste, in a constant it is equally important to know structure, physiology, state of mind and consciousness in all point of view. Taste (*Rasa*) is said to be an effective therapeutic way to determine the minutest composition of food as well as body's own constitution and has high significance other than sensing the taste of food and determining its effect in balancing the state of body, mind and spirit[1].

*Rasa* in different contexts
*Rasa (Dhatu)*: One among the *Sapta Dhatu*[2].
*Rasa (Parada/Mercury)*: In *Rasashashtra*, *Parada* is synonymous to *Rasa* as it has capacity of accepting other metals like gold etc.
*Rasa (Kalpana)*: It is a juice of plant which is being expressed by crushing [3].
*Rasa (Indriyartha)*: The object, known by *Rasanendriya*, the sense organ located in the tongue is called as *Rasa*[4].

*Rasa* is defined as a special sense known through the *Rasana* or *Rasanendriya* (tongue or taste buds). But after all the observations concept of *Rasa* can be defined as an object of gustatory sense organ located in the tongue which is an expression of perceiving taste in terms of composition, properties and probable action of the *Dravya*[5].

Numbers of *Rasas* - There are six *Rasas* which are has more importance in therapeutic process. They are *Madhura, Amla, Lavana, Katu, Tikta and Kashaya*[6,7].

*Rasa in Nutrition Concept* – *Rasa* is the director of action of *Ahara Dravya*, as per *Ayurveda, Ahara* should contains all 6 *Rasas*
otherwise it is not balanced diet. Each Rasa will have special functions depending upon their physical constituents. All Rasa’s together in regular quantity provides better nutrition and maintain the health.

Concept of Amla Rasa -
Amla means sourness or acidity so the taste which is perceived as sourness is known as Amla Rasa.

Panchabhoutika constituents - It is predominant of Prithvi and Agni Bhutas\[8\]. In some other classics it is mentioned that it is Jala and Agni Bhutas and is responsible for formation of Amla Rasa\[9\].

Properties and functions of Amla Rasa
It is Vyavayi, Laghu and Snigdha\[10\]. It has digestive and appetizing which gives rise to an acid (digestive) reaction in the stomach, it is cold to touch and originates a slimy or mucous secretion., it pacifies Vata by acting as carminative (Anulomana), creates burning sensation in stomach (Koshthvidahi) and increases Pitta and Raktha Dosha. It is hot in potency but cold to touch, nourishes sense organs, produces interest in foods (Rochana) and acts as a digestive and appetizer. It increases and nourishes body (Brimhana, Tarpana and Prinana) promote secretion like digestive juice (Kledana) and cardiac tonic (Hridya)\[11,12\].

Characters of Amla Rasa\[13\]

Amla Rasa (dentine hypersensitivity), Mukhasrava (secretion in the mouth), Swedana (sweating), Mukhabodhana (increase interest towards food), Asyakanthavidaha (burning pain in mouth and throat), Sharira Shaithilaya (looseness of body), Durbalanamshwayathuapadayati (oedema in weak persons), Dosha Pachana of Kshata, Dagdha, Bhagna, Shotha. (suppuration in wounds, burns, fractures or swelling), Paridahati Kantham Urohridaya (burning sensation in throat, heart and chest).

Effect on Dosha
Vata Dosha is pacified by three Rasas i.e. Madhura, Amla, Lavana and Pitta Dosha is pacified by Kashaya, Tikta, and Madhura. KaphaDosha is pacified by Katu, Tikta and Kashaya.
Amla Rasa aggravates Pitta due to Ushna-Snigdha Guna, aggravates Kapha due to Snigdha Guna and gives Kledana due to Ushna- Snigdha qualities and gives Kledana due to Ushna- Snigdha qualities and gives Kledana due to Ushna-Snigdha Guna and gives Kledana due to Ushna- Snigdha qualities and gives Kledana due to Ushna-Snigdha Guna and gives Kledana due to Ushna-Snigdha Guna and gives Kledana due to Ushna-Snigdha Guna and gives Kledana due to Ushna-Snigdha qualities and gives Kledana due to Ushna- Snigdha qualities and gives Kledana due to Ushna-Snigdha qualities and gives Kledana due to Ushna-Snigdha qualities and gives Kledana due to Ushna-Snigdha qualities and gives Kledana. It alleviates Vata by Ushna- Snigdha qualities and maintains Vata Dosha in its own path, this activity is known as Vatanulomana\[14\].

Effect of Amla Rasa on Dhatu
In the case of Raktha Kshaya, the relationship between Amla and Raktha Dhatu will facilitate each other due to their Samanyata of Gunas.
In other contexts the relationship between
Raktha and Amla like Pandu, Raktha Pitta etc. this relationship takes an impending effect over the body due to association with other Nidanas related to those specific diseases\textsuperscript{[15]}

**Effect of Amla Rasa on Mala**

Due to Snigdha Guna it expels Mala and Mutra with ease and because of Ushna Guna Amla promotes Sveda. It relieves Mudhavata by promoting proper Pachana & it expels Mala.

Once the Malas are expelled, the obstruction to Vata is cleared. Thus it initiates the proper flow of Vata (Anulomana) in Mudhavata\textsuperscript{[16]}.

**Effect of Amla Rasa on Agni**

**Table no. 1: Functions of Amla Rasa according to srotas**

<table>
<thead>
<tr>
<th>Srotas</th>
<th>Karma</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annavaha</td>
<td>Bhaktam Rochayati, Agni Dipayati, Vatanulomayati, Asyam Sravayati, Bhuktam Apakarshayati, Jarayati.</td>
</tr>
<tr>
<td>Rasa vaha</td>
<td>Urjayati, Balam Vardhayati, Hridayam Tarpayati, Prinayati.</td>
</tr>
<tr>
<td>Rakthavaha</td>
<td>Vardhana</td>
</tr>
<tr>
<td>Mansavaha</td>
<td>Deham Brihayati, Balam Vardhayati</td>
</tr>
<tr>
<td>Medavaha</td>
<td>Kledayati</td>
</tr>
<tr>
<td>Shukrovaha</td>
<td>Kshaya</td>
</tr>
<tr>
<td>Malavaha</td>
<td>Anulomana of Mala</td>
</tr>
<tr>
<td>Manovaha</td>
<td>Mano Bodhayati, Indriyani Dradhikaroti</td>
</tr>
</tbody>
</table>

**Importance of Amla Rasa in Swastha**

Shadrasayuktha Bhojana has been advised and should be used in a proper sequence as mentioned. Sushruta quotes the sequence of Rasa in Ahara that is initially Madhura, Amla and Lavana and at the end Katu Tikta and Kashaya Rasa s should be taken\textsuperscript{[17]}.

**Utility of Amla Rasa in treatment**

In case of Raktha Kshaya there is mentioning of Amla Preethi.

In treatment of Pandu Amla Rasa Anupana has been mentioned.
In contemporary science, the cases of Anemia, is given with vitamin C along with the iron & folic acid. So Amla Rasa plays important role in treatment \[18\].

**Signs and symptoms of excess consumption of Amla Rasa** \[19,20\]

There is explanation regarding Atiyoga in Brihatrayies. It is explained that when the Amla Rasa is consumed in excess quantity it may causes any of the lakshanas enlisted below.

- **Dantaharsha** - Morbid sensation of teeth,
- **Trishna** - Thirst, **Akshinmilana** - closing of eyes,
- **Samvejayati Lomani** - Horripilation, **Kapha Vilapayati** - It liquefy Mucus, **Pittam Abhivardhayati** - it increases the Pitta,
- **Rakham Dushayati** -It pollutes Raktha, **Mansa Dhatu Vidaha** - It Burns Muscle tissue, **Sharira Shaithilya** - Flaccidity of body, **Durbalanam Shwayathu Apadayati**-produces edema in weak persons, **Dosha Pachana of Kshata**, **Dagdha, Bhagna, Shotha., Paridahati Kanthamuro Hridaya** - it produces burning sensation in the throat and chest regions,
- **Timira** - darkness in front of eyes, **Bhrama** – dizziness, **Kandu** – itching, **Pandu** – Pallor,
- **Visarpa** - Spreading type of skin disease, **Visphota** -Skin rash
- **Jwara** - Rise in body temperature)

**DISCUSSION**

Ayurveda divides Dravy (Ahara Dravya) on many basis and nutritional values. Rasa is the base for division of Ahara Dravya. There are so many other classification which holds good for different other peruses, but classification based on Rasa as benefits like carry identification by contact with tongue and their respective functions can be referred by their Mahabhuta predominance. Thus all the 6 Rasas are needed to be consumed every day for a balanced nutrition. Efficiency of each Rasa may causes changes in the body and over consumption will also lead to changes.

To maintain good health and strength, it is needed to consume Ahara Dravyas with all 6 Rasas, otherwise person will be susceptible for diseases and unable to perform his work normally.

Amla Rasa is said to be predominant of Pruthwi and Agni (Jala and Agni) Mahahuta, their Gunas will also be responsible to that, i.e. they have Ushna, Guru, Ruksha. Based on these we can explain the functions of Amla Rasa Dravya.

Any sour substance should process H$^+$ ions to taste sour. All these are acidic in nature, with pH $<7$, Chemically, the substances which are having H$^+$ ions may not have action on the body, but some action will be common. Ayurveda also gives important in common action on sore substances, but individually. The substance may have different other functions also.
Discussion on Functions of Amla Rasa: It is having functions like Deepana, Pachana, Snigdha, Hrudya, Rochana, Tikshana, Ushnavirya, Laghu, Kapha Pitta Raktha Vardhaka, Vatanulomana, Asyam Sravayati, Bhuktam Apakarshayati, Kledayati, Jarayati.

Deepana and Pachana: By the virtue of its Gunas like Ushna, Tikshna, it enhances the Jataragni and does the Deepana and Pachana.

Hrudya: Amla Rasa is Hrudya means here we can considered as cardio protective as well as sensual satisfaction,

Hrudhya as Cardio protective – Various studies showed that there is an improvement in lipid profile studied by comparing levels of Total Cholesterol, Triglycerides, HDL, LDL, and Atherogenic index with Atorvastatin in high fat fed Albino mice.

Hrudhya as Sensual satisfaction – Amla Rasa gives mental and sensual satisfaction on eating, Chakrapani explains it as “Hridhyanam Iti Ruchyanam, Amlam Svayam Eva Rochayati” means Hrudyam means Ruchi and it produces more salivation and helps in taste perception of consumed food.

Amla Rasa Dravyas are not included in the Hrudya Gana so Hrudya can be taken as sensual satisfaction because of proper taste perception[21].

Rochana – it is already explained in the above paragraph that Amla Rasa improves taste perception by producing more amount of saliva which helps in proper mixing of food content and appreciation of taste.

Kapha Pitta Raktha Vardhaka – as the Amla Rasa is predominant of Agni Mahabhutha, and it is Snigdha in nature which are also the Gunas of Kapha, Pitta, and Raktha, by applying the Samanya Vishesha Sidhantha one can understand that Kapha Pitta Raktha Vardhaka action.

Vatanulomana – Amla Rasa is having Sara Guna which is told by Bhavapraksha, and Sara Guna helps to move the Adhovata and performs Anulomana Karma. Various studies reported the Citrus fruits are carminative and laxative in nature.

Asyam Sravayati- The parasympathetic nervous pathways for regulating salivation, demonstrate that the salivary glands are controlled mainly by parasympathetic nervous signals all the way from the superior inferior salivatory nuclei in the brain stem. The salivatory nuclei are located approximately at the juncture of the medulla and pons and are excited both by taste and tactile stimuli from the tongue and other areas of the mouth and pharynx. Many taste stimuli, especially the sour taste (caused by acids) elicit copious secretion of saliva often 8 to 20 times the basal rate of secretion

Bhuktam Apakarshayati, Kledayati, Jarayati – As Amla Rasa is predominant of Jala and Agni Mahabhutha which helps in proper moisturizing
of food and *Ushna Guna* helps in the proper digestion of consumed *Ahara*.

**Atiyoga Lakshanas** - if it is taken in excess it causes *Bhrama*, *Pandu*, *Shaithilya*, *Timira*, *Kandu*, *Visarpa*, *Shopha*, *Danta Harsha*, *Pittadusti*, *Mamsa Vridhahi*, *Trishna*, *Urodaha*, *Shotha*, *Sameelita Akshi*.

*Bhrama*, *Pandu*, *Visphota* and *Visarpa*, *Pittadusti* - *Bhrama* (vertigo), *Pandu* (anemia), *Visphota* (blister) and *Visarpa* (cellulitis) are because of vitiation of *Pitta* by the *Gunas* of *Amla Rasa* and along with the *Pitta*, *Raktha* also get vitiated and causes *Bhrama*, *Pandu*, *Visarpa*, *Vispota*.

*Danta Harsha* – means dentine hypersensitivity it is because of acidic nature of the *Amla Rasa* and Dentine contains thousands of microscopic tubular structures that radiate outwards from the pulp; these dentinal tubules are typically 0.5–2 micrometers in diameter. Changes in the flow of the plasma-like biological fluid present in the dentinal tubules can trigger mechanoreceptors present on the nerves located at the pulpal aspect, thereby eliciting a pain response. This hydrodynamic flow can be increased by cold, air pressure, drying, sugar, sour (dehydrating chemicals), or forces acting onto the tooth. Hot or cold food or drinks and physical pressure are typical triggers in those individuals with teeth sensitivity.[22]

*Trishna* – when *Amla Rasa* is taken in excess it causes *Pitta Vrudhi* because of *Ushna Guna* and it leads to *Shoshana* of *Dravamsha* causing *Trishna*.

*Shotha* – Due to vitiation of *Kapha Pitta* and *Raktha*, it is commonly seen in symptoms of citric acid intolerance or allergy. Swelling of the lips, face, tongue and throat, are often associated with food allergies and can make it very difficult to breathe and swallow. Swelling can also move to other areas of the body such as the eyelids, ears, hands and chest in the form of hives. These red, raised, often itchy, bumps can appear in one spot or all over the body depending on the severity of them it can last for hours[23].

*Urodaha* – Acid reflux can be painful and is often associated with a burning sensation. It can occur when stomach acid is pushed into the esophagus. During an episode of acid reflux, you may taste regurgitated food or sour liquid at the back of your mouth or feel a burning sensation in your chest. Citric acid can cause an increase in stomach acid.

**CONCLUSION**

The concept of *Rasa* (Taste) is the base for analysis of nutrition of the food substances. *Amla Rasa* is a nutritive *Rasa*, which can increase all the *Dhatu* when taken in required quantity and performs functions like *Deepana*, *Pachana*, *Rochana*, *Hrudya* etc. Except quantity of *Amla Dravyas* to be used in food
every day cannot be told exactly as there are no proper references about it. When consumed in excess, it may cause features like Bhrama, Pandu, etc. which are mostly related to Pitta and Raktha Vruduhi because of Agneya nature of Amla Rasa.

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