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A COMPREHENSIVE REVIEW ON PHALA VARGA OF HARITHA SAMHITHA: PHYTOCONSTITUENTS AND THERAPEUTIC EFFECTS

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ABSTRACT

Ahara is the main factor which is required for the sustenance of life. *Ayurveda* gives special emphasis on *Ahara Vargas* as it is not only required in the management of diseases but also plays a crucial role in the prevention of diseases. In *Haritha Samhitha*, there is a detailed description about *Phala* in *Phala Varga* along with their *Guna Karma*. *Phala*, or fruits, are highly valued in *Ayurveda* for their diverse benefits. They are recognized for their roles in balancing the three *Doshas* (*Vata*, *Pitta* and *Kapha*) and enhancing overall health. Fruits are known to possess antioxidant, anti-inflammatory, and immunomodulatory properties. They aid in digestion, support respiratory health, and boost immunity, contributing to a holistic approach to disease prevention and health promotion as emphasized in *Ayurveda*. Here, an attempt is made to review different *Phalas* mentioned in *Haritha Samhitha* along with their Nutritive, Phyto actives, and Pharmacological properties.

KEYWORDS: *Ayurveda, Fruits, Phala Varga, Haritha Samhitha, Anti-oxidant rich foods*.

INTRODUCTION

Ahara (Diet), *Nidra* (Sleep), and *Brahmacharya* (Celibacy/moderation) are known as the *Trayopasthambha*—the three pillars that support life. Among these, *Ahara* plays a crucial role in disease prevention and health management. *Ayurveda* emphasizes the harmony of physical

and mental well-being; therefore, *Sattvic* foods and antioxidant-rich diets, such as fruits and vegetables, not only enhance physical health but also promote mental well-being.

Haritha Samhitha has exclusively described various *Ahara vargas* (Food groups), such as *Jala varga* (Water group), *Dugdha varga* (Milk group), *Mutra varga* (Urine group), *Ikshu varga* (Sugarcane group), *Kanjika varga* (Fermented liquid group), *Manda varga* (Thin gruel group), *Yusha varga* (Soup group), *Taila-vasa varga* (Oil and Fat group), *Dhanya varga* (Cereal group), *Shakavarga* (Vegetable group), *Phalavarga* (Fruit group), *Madhu varga* (Honey group), *Madhya varga* (Alcohol group), *Mamsa varga* (Meat group) - *Chathushpada* (Quadrupeds), *Dvipadajiva* (Birds), *Mamsa varga* - *Sthalachari jiva* (Land animals), *Jalachara mamsa varga* (Aquatic animals), *Annapana varga* (Food and Drink group), etc.

In the *Phala Varga* (Fruit group), Acharya *Haritha* enumerates and describes the *guna karma* (Qualities and Actions) of each fruit, namely *Aamra* (Mango), *Jambu* (Blackberry), *Kola* (Jujube), *Dadima* (Pomegranate), *Mathulunga* (Lime), *Nimbuka* (Lemon), *Naranga* (Orange), *Chincha* (Tamarind), *Draksha* (Grape), *Narikela* (Coconut), *Kadali* (Banana), *Kapittha* (Wood apple), *Kharjura* (Date), *Puga* (Areca nut), *Nagavalli* (Betel leaf), *Khadira* (Black catechu), *Churnaka*, and *Tambula* (Betel leaf).

METHODOLOGY

The properties of each fruit in the *Phala Varga* of Haritha Samhitha are systematically tabulated after the review, with detailed discussions on their photoactive constituents, pharmacological activities, and Therapeutic benefits in the subsequent sections.

The detailed *guna* and *karma* of each fruit are mentioned in the table below.

Properties and Actions of *phala varga*

Table no. 1: Showing *Phala* (Fruits) enumerated in *Phala Varga* with their *Guna-Karma.*[1]

Sl. No	***Phala nama***	***Guna, Karma***
1	*Aamra phala*	*Apakva: Sangrahi, Pitta asruk Kopana* *Pakva: Madhura-Amla, Bhedaniya, Pittaamaya nashana*
2	*Jambu*	*Grahi, Rochana, Vatahara*
3	*Badara*	*Amla-madhura, Kaphakara, Grahi*
4	*Dadima*	*Vatadhirujahara, Aamayagnam*
5	*Rajadhana*	*Madhura, Susvadhu*
6	*Parushaka, Karaha Peelu, Simhi,*	*Pramehahara, Pittahara, Sandhivatahara*

	Karamardha	
7	*Mathulunga*	*Phala: Laghu, Ruchya, Kapha Vatahara, Anatarkrimihara, Jataramayaghna, Sandusta Rata-Pittadosha Hara, Deepana, Sula, Shwasa, Kasa,Aruchi,Trishnahara* *Tvak: Tikta, Durjara, Krimigna, Vata-Kapha Hara* *Kesara: Dipana, Laghu, Sangrahi, Arsho- Gulmahara* *Madhya: Sleshmahara, Chardihara, Arochakahara* *Karaha: Madhura, Sheetha, Guru, Snigdha, Vata-Pittahara*
8	*Beejapooraka*	*Phala: Vatapittakara, Hridhya, Varnya, Ruchya, Rakta, mamsa, balapradha* *Swarasa: Sula, Anaha, Gulma, Mandagni, Aruchi, Swasa-kasahara, Hridhya, Vata-pittahara, Kaphakrith, Durjarapaka* *Pushpa and Beeja: Viryakrith, Krimihara, Arshohara, gulmarogahara*
9	*Nimbuka*	*Teekshna, Ushna, Krimisamuha nashana, Udararogahara, Vibandhahara, Arochaka, Sadhyojwarahara, Malagraha, Gudodhara, Visuchika*
10	*Naranga*	*Madhura, Sandeepana, Kshathara, Rochaka, Useful in Arshas, Hrithshoola, Krmiroga, Kasa*
11	*Chincha*	*Apakwa chinchaphala: Pittajanana, Vidahikaraka* *Pakwa Chincha phala: Sheetha, Vatamayahara, sulahara*
12	*Draksha*	*Madhura, Amla, Kashaya, Tidhoshahara, Useful In Rudhiramaya, Daha, Shosha, Murcha, Jwara, Swasa, Kasa*
13	*Narikela*	*Apakva Narikela: Kaphavatakara, Brihmana, Sheetha, Vrushya* *Pakva Narikela: Madhura, Snigdha, Sheeta, Hridhya, Brihmana, Bastishodaka, Raktapittakara, Vishatambikara*
14	*Kadali*	*Apakva Phala: Sheeta, Kashaya, Vata-Kaphakara* *Pakva Phala: Hridhya, Manojna, Santarpanakara, Balya, Useful In Rakta-Pitta,Swasa, Daha*
15	*Kapittha*	*Madhura,Kashaya, Sheeta, Grahi, Laghu*
16	*Karjura*	*Apakva Phala: Tridoshara* *Pakva Phala: Hitha, Shrestha, Tridoshagna*
17	*Puga*	*Kashaya, Madhura, Bhedaniya, Pitta-Kaphahara*
18	*Nagavalli*	*Hridhya, Sugandhi, Kapha-Vatahara*
19	*Khadira*	*Kapha-Pittahara, Kanthya, Kustahara*
20	*Churnaka*	*Teekshna, Kaphavatahara*
21	*Tambula*	*Nagavallidhala* in combination with *Puga Phala, Khadira Sara, Karpura Is Kanthya, Ruchya, Hithakara to Hridhya and Uras*

- **Aamra phala (आम्र फल)**

- Botanical name- *Mangifera indica* Linn

- Family- Anacardiaceae

- *Aamra phala* is abundant in phenolic compounds such as mangiferin, catechin, gallic acid, and ellagic acid. It also contains flavonoids like quercetin and kaempferol, alongside saponins, triterpenes, and organic acids including malic acid and citric acid. The presence of carotenoids adds to the vibrant pigments.
- Mangiferin, a xanthone compound and a natural polyphenolic antioxidant, demonstrates excellent antioxidant properties. It has been shown to exhibit pro-hypoglycemic activity by modulating glucose metabolism, improving insulin resistance, reducing cholesterol synthesis, and inhibiting the expression of TNF-α and inducible nitric oxide synthase. Furthermore, mango peel is a rich source of dietary fiber, proteins, and carbohydrates.[2,3]

- ***Jambhu phala* (जम्बु)**

- Botanical name: *Syzygium cumini* (L.) Skeels
- Family: Myrtaceae

- *Jambu Phala* is abundant in anthocyanins, phenolic acids such as ellagic and gallic acid, as well as flavonoids like quercetin, myricetin, and kaempferol. Additionally, it contains alkaloids like jambosine, glycosides, tannins, and terpenoids. The fruit is also a rich source of various vitamins and minerals.[4]
- The presence of tannins particularly helps to tighten and soothe the intestines, thereby reducing excessive fluid and preventing loose stools. Jambosine works by inhibiting the enzyme alpha-amylase, which is responsible for breaking down starch into sugar. By slowing down this process, Jambosine helps to reduce the osmotic load in the intestines and prevents the excessive water secretion that leads to diarrhea.[5,6]

- ***KOLA* (कोल)**

- Botanical name- *Ziziphus jujuba* Mill
- Family - Rhamnaceae

- *Badara*, commonly called Indian Jujube, is rich in Vitamin C, carotenoids, and organic acids such as citric acid and malic acid. It is a source of valuable phytoconstituents including phenolic compounds like catechin, epicatechin, and gallic acid. It also contains triterpenoids such as Betulinic acid and Ursolic acid, as well as flavonoid compounds like quercetin, rutin, and kaempferol, along with tannins.[7,8]

- Catechins have strong antioxidant effects that help reduce oxidative stress in the intestines. This can help protect the intestinal lining and promote healing. Malic acid stimulates digestive enzymes, thus promoting assimilation and aiding normal bowel movements.[9]

- ***Dhadima* (दाडिमा)**

- Botanical name – *Punica granatum* Linn
- Family – Lyrthaceae

- Pomegranate is a powerhouse of dense nutrients and phytoconstituents. It contains flavonoids like quercetin and kaempferol, which have anti-inflammatory actions. Alkaloids such as Pelletierine also exhibit anti-inflammatory properties. Tannins, particularly ellagitannins, are known for their astringent properties. Phenolic acids, including gallic acid and caffeic acid, provide antioxidant and analgesic benefits. The pigments, attributed to anthocyanins, help reduce oxidative stress at the cellular level.
- Gallic acid is known for its cardioprotective activity in various in vivo models. Kaempferol inhibits various pro-inflammatory pathways linked with inflammation.[10,11,12]

- ***Parushaka, Peelu, Priyala, Karamardha***

(परुषक, पीलू, प्रियाल, करमर्द फल)

- *Parushaka – Grewia asiatica* Linn belonging to family Tiliaceae
- *Peelu - Salvadora persica* Linn belonging to the family Salvadoraceae
- *Priyala - Buchanania lanzan* Spreng. belonging to the family Anacardiaceae
- *Karamardha - Carissa carandas* Linn belonging to the family Apocynaceae

- *Parushaka* (*Grewia asiatica Linn) contains* phytoconstituents like Phenolic compounds, flavonoids have shown to increase insulin sensitivity and reduces oxidative stress which is linked to insulin resistance and hyperglycemia. Tannins and alkaloids present in *Peelu (Salvadora persica Linn)* and *Priyala* (*Buchanania lanzan* Spreng) by its anti-inflammatory action reduces chronic inflammation which is the precursor for many metabolic Disorders. Polyphenols present in *Karamadha* (*Carissa carandas* Linn*), Peelu* (*Salvadora persica* Linn) fruit increases insulin- sensitivity and regulates glucose uptake by the cells.[13,14,15,16]

- ***Mathulunga, Beejapooraka* (मातुलुङ्ग, भीजपूरका)**

- Botanical name: *Citrus medica* Linn
- Family: Rutaceae

The fruit of *Citrus medica* Linn contains a variety of bioactive compounds, including flavonoids, alkaloids, and essential oils, which contribute to its medicinal properties. These compounds have demonstrated antiviral activity by inhibiting virus replication and preventing them from entering host cells. For instance, limonene, a terpene found in *Citrus medica*, has shown antiviral effects against specific viruses. By modulating the immune response, these compounds enhance immunity and support respiratory health.[18,19]

- ***Nimbuka* (निम्बुक)**

- Botanical name – *Citrus limon* Linn
- Family - Rutaceae

The essential oils and other organic compounds present in *Nimbuka* (Citrus limon Linn) have shown strong anti-microbial and anti- fungal action against Staphylococcus aureus and Pseudomonas aeruginosa.

Flavonoids and phenolic compounds reduce the pro-inflammatory factors and thereby reduces inflammatory process in condition like arthritis. Saponins have shown mild diuretic effect which helps in reducing excess accumulation of the excess fluid in the body.[19,20]

- ***Narangi* (नारङ्गि)**

- Botanical name- *Citrus sinensis* (L.) Osbeck
- Family – Rutaceae

Narangi is rich in flavonoids, including hesperidin, narirutin, naringin, and eriocitrin, as well as carotenoids such as β-cryptoxanthin and β-carotene, which have been shown to improve lipid profiles by reducing LDL and increasing HDL, thereby contributing to cardio protection. Studies have shown that essential oils like limonene, myrcene, and linalool help increase food intake and gastric motility, potentially acting as appetite enhancers. Phenolic compounds present in this fruit, such as Sinapic acid, are known for their anti-inflammatory effects, which can help reduce inflammation in the airways.[21,22]

- ***Aamlika* (आम्लिक)**

- Botanical name- *Tamarindus indicus* Linn
- Family – Fabaceae

The fruit of *Tamarindus indica* Linn contains several bioactive compounds, including alkaloids, flavonoids, phenols, tannins, saponins, and steroids, which contribute to its analgesic effects. These compounds inhibit the expression of cyclooxygenase-2 (COX-2) and inducible nitric oxide synthase (iNOS), enzymes involved in the inflammatory process. Studies have shown that tamarind may also activate the opioidergic mechanism at both peripheral and central levels, providing pain relief similar to that exhibited by opioid medications.[23,24]

- ***Draksha* (द्राक्ष)**

- Botanical name – *Vitis vinifera* Linn
- Family – Vitaceae

Bio compounds in the fruits of *Vitis vinifera*, such as resveratrol, reduce oxidative stress and inflammation. Flavonoids inhibit the production of pro-inflammatory cytokines, which collectively contribute to lowering fever.

Research indicates that *Vitis vinifera* extracts have antibacterial properties against pathogens like *Streptococcus pyogenes*, *Haemophilus influenzae*, and *Staphylococcus aureus*, helping to suppress bacterial proliferation and manage respiratory infections.[25,26]

- ***Narikela* (नारिकेल)**

- Botanical name: *Cocus nucifera* Linn
- Family: Arecaceae

Narikela, commonly known as coconut, is a rich source of Vitamin C, Vitamin B, magnesium, and potassium. It contains saponins and phenolic compounds such as gallic acid and tannins found in both coconut water and fruit. These components have demonstrated potential antioxidant and anti-inflammatory actions. Coconut helps maintain electrolyte balance by excreting sodium and chloride ions, preventing fluid retention. Additionally, it exerts a diuretic effect by increasing urine output.[27,28]

- ***Kadali* (कदलि)**

- Botanical name- *Musa Paradisiaca* Linn
- Family – Musaceae

- Research has demonstrated that Banana extracts can lower the concentrations of pro-inflammatory cytokines such as IL-1β, IL-6, and TNF-α, which play significant roles in the inflammatory mechanisms linked to heart disease. Bananas, being rich sources of Vitamin C, B vitamins, potassium, magnesium, and iron, help in nourishment. Additionally, biogenic amines such as dopamine and serotonin have shown positive effects on the regulation of sleep patterns, mood, and cognition.[29,30]

- ***Kapittha* (कपित्ता)**

- Botanical name – *Limonia acidissima* Linn
- Family – Rutaceae

- The astringent properties attributed to tannins have been shown to reduce intestinal inflammation and inhibit the growth of microorganisms, making them useful in managing diarrhea and dysentery. Additionally, saponins and flavonoids together soothe the digestive tract, maintaining and restoring normal bowel movements.
- *Limonia acidissima* has exhibited significant cardioprotective properties in multiple research studies. A notable investigation focused on its impact on isoproterenol-induced myocardial infarction in rat models. The findings revealed that the ethanolic extract of *Limonia acidissima* fruit markedly reduced the levels of cardiac marker enzymes such as creatinine phosphokinase and lactate dehydrogenase, while simultaneously enhancing the activity of antioxidant enzymes.[31,32]

- ***Karjura* (खर्जुरा)**

- Botanical name – *Phoenix sylvestris* Linn
- Family – Arecaceae

- *Karjura phala* is abundant in protein and carbohydrates, which are essential for all bodily functions. This fruit contains key glycosides, such as saponin glycoside, phenol glycoside, and flavonoid glycoside, which have shown strong antioxidant, anti-inflammatory, and analgesic properties. Additionally, *Karjura* phala is a good source of vitamins and minerals, including vitamin A, vitamin B6, vitamin K, magnesium, and

potassium, all of which contribute to overall health and well-being. The high dietary fiber content aids in digestion and supports a healthy digestive tract.[33]

- ***Pooga* (पूग)**

- Botanical name – *Areca catechu* Linn
- Family – Arecacaeae

- *Puga* being rich in alkaloids like Arecoline, Arecaidine, have shown to increase gut motility and secretion and stimulate gastro-intestinal tract which is essential in the management of constipation.
- Studies have shown that Fatty Acid Composition of the Areca catechu such as lauric acid, myristic acid, palmitic acid, oleic acid, and linoleic acid1. Have potential influence on lipid metabolism.[34,35]

- ***Nagavalli* (नागवल्लि)**

- Botanical name- *Piper betel* Linn
- Family- Piperaceae

- *Nagavalli* has vivid phytoconstituents like Phenols namely Eugenol, Hydroxychavicol, chavicol which exhibits significant anti-inflammatory and analgesic effects by inhibiting the production of pro-inflammatory cytokines and enzymes responsible for pain and inflammation. It reduces Lipid peroxidation thus restoring the cardiovascular health.[36]

- ***Kadira* (खदिर)**

- Botanical name – *Acacia catechu* Linn
- Family – Fabaceae

- Catechin in *Acacia catechu* has shown positive results in alleviating psoriasis by inhibiting pro-inflammatory cytokines and enzymes, which are precursors of chronic inflammation. Tannins, including Catechutannic acid and Phlobatannins, possess wound healing and antimicrobial properties essential for skin regeneration. Quercetin can reduce inflammation in the respiratory tract by inhibiting the production of pro-inflammatory cytokines and enzymes, which is particularly beneficial in conditions like asthma and chronic obstructive pulmonary disease (COPD). Additionally, isorhamnetin acts as an antioxidant, protecting lung tissues from oxidative damage and improving overall respiratory health.[37,38]

DISCUSSION

Fruits are rich in phytochemical constituents like tannins and flavonoids, which act at the cellular level. The pigments in fruits, such as carotenoids and anthocyanins, possess antioxidant properties and help regulate metabolic pathways by modulating enzyme activities and gene expression related to glucose and lipid metabolism. Vitamins and minerals, found abundantly in fruits, are crucial nutrients that play vital roles in the body's biochemical and physiological processes. These organic compounds are essential for normal cell functions, growth, and development. They assist in the breakdown and assimilation of proteins, carbohydrates, and fats. Most vitamins—such as A, C, D, E, K, B1, B2, B3, B5, B6, B7, B9, and B12 (except for vitamin D)—cannot be synthesized by the body and must be obtained through diet such as fruits and vegetables. Dietary fibers in fruits are fermented by gut bacteria, producing short-chain fatty acids (SCFAs) such as acetate, propionate, and butyrate. These SCFAs improve lipid metabolism by inhibiting cholesterol synthesis in the liver.[40,41]

In this review most of the fruits included in *Phala Varga* (Fruit group) are primarily characterized by *Madhura* (Sweet) and *Amla* (Sour) *Rasa*. This indicates a rich nutrient profile, particularly in terms of micronutrients such as vitamins. They do *Preerana* and *Poshana* of *Dhathu* especially *Rasa* and *Rakta*. *Phala ahara* is considered a *satvika ahara* that brings stability to the mind, builds immunity, and improves the healing response. Fruits such as *Draksha, Dadima, Kadali*, and *Narikela* are recommended for managing conditions like *Jwara, Daha, Trishna*, and *Kshatha*. On the other hand, fruits like *Mathulunga, Beejapooraka*, and *Nimbuka* are beneficial for their *Chardhi Nigrahana*, *Hridhya* and *Rochaka* owing to their *Amla Rasa*. Additionally, they are effective in alleviating *Kasa-Shwasa* by virtue of their *Vata* Shamana and *Anulomana* actions.

Acharya Haritha has specifically explained the *Guna* (Quality) and *Karma* (Action) of each fruit and its specific parts, providing important guidance for physicians in advising dietary recommendations to patients (*Pathya Apathya*).

CONCLUSION

In conclusion, the *Phala Varga* detailed in the *Haritha Samhitha* highlights the vital role of fruits in Ayurveda. This ancient text serves as a comprehensive guide for utilizing these natural resources in both disease prevention and health maintenance. The review underscores the enduring wisdom of Ayurveda, which integrates dietary elements such as fruits into a

holistic approach to wellness, emphasizing *Ahara* as a fundamental pillar in sustaining life and promoting health.

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