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COMPARATIVE CORRELATION OF PHARAMACOLOGICAL ACTION OF *PHYLLANTHUS EMBLICA* LINN. WITH CLASSICAL REFERANCE IN AYURVEDA: A REVIEW

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ABSTRACT

The *Amalaki* (Phyllanthus emblica linn.) is a traditional medicine having many known nutritional and medicinal uses in various diseases. It is a natural herb that having an antioxidant with the full of natural source of Vitamin C. Regular use of *Amalaki* improves immunity, fight against chronic diseases like hypertension, chronic cough and cold, diabetes, high cholesterol, chronic infections, chronic fatigue and chronic inflammatory conditions, influenza. Numerous research studies shown on *Amalaki* fruit suggest that it has anti-bacterial, anti-viral, anti-fungal, cardioprotective, anti-pyretic activity, gastroprotective and anti-stress activity, anti-oxidant. Present study involve that pharmacological activity of *Amalaki* fruit as per modern correlate with Ayurvedic classical pharmacology action described in *Samhitas* and *Nighantus* with appropriate justification. It is very interesting to observe that most of the pharmacological screened activities are described in Ayurvedic classical text by various *Acharyas*. It shows that the former acharyas are aware about the pharmacological property of medicinal plants and it was practiced in daily routine practice. This review article helps to design futuristic pathway for pharmacological testing of medicinal plant.

KEYWORDS: *Amalaki, Rasayana,* Immunomudulator.

INTRODUCTION

Amalaki or *Phyllanthus emblica* Linn. belonging to family *Phyllanthaceae* is commonly known as *'Amla'*. In English name is 'Indian Goosebbery'. It is a small or medium size tree found in all deciduous forest of India. The leaves are simple feathery, small oblong. The tree is characteristic greenish-grey and with smooth bark. External features of fruit are fleshy obscurely 6 lobed with 6-trygonus seeds. They are very hard and smooth in appearance. In India *Amalaki* tree is found throughout the forest of tropical area up to 4500 ft on hills.[1] *Amalaki* is mainly natural source of vitamin C contain 600-750 mg per hundred gm of the fresh pulp. It is found that vitamin C content of dried fruit is not lost considerably. It may be due to the presence of tannins, which retards oxidation of vitamin C. Many herbal preparation and Classical formulation is formulated by this plant. Mainly *Triphala* and *Chyavanaprasha* is main formulation of *Amalaki*. In classical reference plant fruit having *Pancharasa* except *Lavana rasa*, *Sheeta veerya*, *Madhura vipaka* and *Tridoshahara property*. There are many formulation and *Amayeek prayoga* of *Amalaki* is quated in Classical text. In this text classical pharamacological activity of *Amalaki* is correalation with modern pharmacological activity by their *Rasa*, *Guna*, *Veerya*, *Vipaka*, *Prabhava* and *Rasayana* propery. Mainly 14 pharmacological activity is compared with classical reference with their appropriate ayurvedic correlation.

MATERIAL AND METHOD

The comparative observation to correlate the pharmacological screening of Amalaki among conventional methods and Ayurveda documentation are mentioned.

RESULT AND OBSERVATION

Pharmacological activity of *Phyllanthus emblica* Linn.	**Direct and indirect reference with classical text**	**Ayurvedic correlation this activity**
Anti-aging *Amalaki* contains low molecular weight hydrolysable Tanins. So it is one of the strongest antioxidant herb in Ayurveda. Free radicals are natural by products of our own metabolism. Apart from enhancing nutrition Amla gets remove these free radicals that improve cell ageing due to high quantity of vitamin-c and flavonoids. Its effect increases both frontal cortical and striatal (rat brain) concentration of free radicals searching	*Rasayana*[3] *Vayashtha*[4]	*P.emblica* having *Pancharasa* except *Lavana rasa*, *Madhura vipaha*, having *Tridoshahara* activity, having *Rasayana* property. One of the synonymes of *Amalaki* is *Vayastha*. This is directly interpreted with anti-aging property.

enzymes with associated decrease in lipid peroxidation in these brain areas.[2]		
Cardio-protective The fresh juice of *Phyllanthus emblica* Linn. fruit which is rich in Embalicanin-A and –B is supportive to avoid the ischemia-reperfusion-induced oxidative pressure in rat heart. The fruits are having cardioprotective effect. *Phyllanthus emblica* Linn. diminishes oxidative stress and averts development and evolution of hypertension.[5]	*Hridhya*[6]	*Amalaki* having mainly *Amla pradhan* drug. *Amla rasa* having one of the most imporatant property is *Hridhya*. Also a *Rasayana* drug and having *Tridoshahara* property.
Hepato-protective: *Amalaki* has been verified in protection against a wide variety of hepatotoxic agents, such as heavy metals ethanol, paracetamol, carbon tetrachloride, ochratoxins, hexachlorocyclohexane and antitubercular drugs. *Phyllanthus emblica* Linn. and its contents like phytochemicals, gallic acid, ellagic acid, quercetin and corillagin, have hepatoprotective properties against various xenobiotic compounds.[17]	*Raktapitta hara*[18] *Sarvadoshgna (su.)*	As per *Susruta Amalaki* having *Sarvadoshahara* property by its *Rasa, Guna, Veerya, Vipaka* and *Tridoshahara Prabhav*. Main quality of *Amalaki* is improving quality of blood, this is part of Hepatoprotective activity. *Raktapitta* is one of the blood disorder that is directly connected with liver.
Eye disease *Phyllanthus emblica* Linn. is called as *Chakshyushya* according to Ayurveda. It is effective in the action of conjunctivitis, glaucoma, diabetic eye diseases like Retinopathy etc. It decreases intraocular pressure by quality of its laxative action. *Phyllanthus emblica* Linn. is beneficial in patients in several ophthalmic disease specifically, rubor (inflammatory conditions), mucosa xerosis (dry eye), chronic conditions (pterygium or pinguecula) and surgical cataract patients, Age connected devolution like ARMD, other retinal degerative diseases, etc.[19]	*Chakshushya*[10]	*Amalaki* having *Sheetaveerya* so it is mainly beneficial for eye. *Triphala Churna* with ghee or honey at Night is beneficial for *Chakshu*.
Gastric ulcer Methanolic extract of *Phyllanthus emblica* Linn., presented dose dependant ulcer protection; it significantly reduced the of acid, pepsin and increased the musin secration, cellular mucous.[11]	*Amlapitta, Paktishoolahara, Pittadoshaprashaman, Sheeia veerya, Pittarujapaha*[12] *Dahahara*[13]	P.emblica having *Sheeta veerya* and *Madhura vipaka* useful in Acidity, Gastric ulcer, Peptic ulcer.
Hypolipidemic agent *Phyllanthus emblica* Linn. fruit juice is an active hypolipidemic agent. It dicrease aortic plaques. It is effective in low-density lipoprotein (LDL) oxidation and	*Medohara, Ruksha, Kashaya*[15]	This is many property of P.emblica that is mainly useful in obese person and all pathological condition for lipid metabolism.

cholesterol levels.[14]		
Anti-diabetic: The high amount of vitamin C content in the fruit of *Amalaki* decreases the sugar level in blood. It stimulate the islets of Langerhans i.e. the isolated group of cells which secrete hormone insulin.[26]	*Pramehagn.*[17] *Pramehahara*[18]	There is a direct reference as anti-diabetic in *Bhavaprakasha Nighantu* and *Priya Nighantu*. It may be due to *Kashay, Tikta, Katu Rasa.*
Anti-bacterial activity: *Phyllanthus emblica* Linn. has also own the antimicrobial activities. The fruit have been described to have antibacterial activity against Klebsiella pneumoniae, Proteus mirabilis, Pseudomonas aeruginosa, Escherichia coli, K. ozaenae, S.paratyphi A, S. paratyphi B and Serratia marcescens.[19]	*Katu, tikta, Kashaya rasa (su.) Sarvadoshgna (su.)*	There is not direct reference as anti-bacterial activity in *Samhita*. P.emblica enhancing the immunity as *Rasayana* (tonic) drug and as per there *Rasa, Guna, Veerya, Vipaka* capable to cover maximum range of microbial growth.
Anti-oxidant: *Phyllanthus emblica* Linn. fruit is a rich source of vitamin C and low molecular weight hydrolysable tannins. Because of these content Amla becomes a good source of antioxidant. Tannins like embelicanin-A (37%), emblicanin-b (33%), punigluconin and pedunculagin conjointly give protection against Oxygen radical enclosed hematolysis of rat peripheral blood erythrocytes.[20]	*Rasayana*[21] *Shramagn (rajmartand)*	P.emblica having direct reference as *Shramahara* (relieving tiredness) action and *Rasayan* (tonic) in classical text.
Anti-pyretic: The matters like tannins, alkaloids, phenolic compounds, amino acids and carbohydrates are shown to be having antipyretic effect. Extracts of *Phyllanthus emblica* Linn. fruits have effective anti-pyretic.[22]	*Jwarahari*[23]	There is direct reference of P. emblica as a *Jwaragna.*
Intestinal-disorder: *Phyllanthus emblica* Linn. fruit contains tannins as its main factor and it is astringent in nature and tannins has high potential treating intestinal disorders.[24]	*Vibandha-Aadhmaan-vishtambha dosh shaman*[25] *Bhedana*[26]	There is direct reference P.emblica as *Adhmanhara, Vishtambhahara* and *Bhedana* by their *Sara* (laxative) *Guna*.
Immunomodulatory effects: It has been established that extracts of *Phyllanthus emblica* Linn. fruit have significant immunomodulatory action. *Amalaki* revealed immunostimulant activity.[27]	*Rasayana*[28] *Vayastha*[29]	To get the required pharmacological action one need to triturate *Amalaki churna* with *Amalaki Swaras* By their *Rasayaan* (tonic) property giving immunomodulatory effect.
Antifungal property *Phyllanthus emblica* Linn. was reported against Aspergillus (Satish et al., 2007). Fruit ethanol and acetone extracts showed	*Katu, Tikta, Kashaya rasa (su.)*	P.emblica having *Rasayana* property this drug is very good as immunity booster agent and *Katu, Tikt* and

moderate activity against Fusarium equiseti and Candida albicans where Grisofulvin was used as standard antibiotic (Hossain et al., 2012).[30]		*Kashaya Rasa* so this is for covers all microbial growth.
Anticancer: *Phyllanthus emblica* Linn. prevent the growth and spread of different types of cancer like, intestinal and malignant ascites, liver, uterus, breast, pancrease. It also diminishes the side effect of chemotherapy and radiotherapy, which generally used for the treatment of cancer.[31]	*Rasayana*[32] *Sarvadoshgna (su.)*	There is no direct reference of P.emblica as Anti-cancer activity but having *Rasayana* property we can used in cancer patient as a life-supporing agent drug.

DISCUSSION AND CONCLUSION

There are direct reference about these pharmacological activity in ayurvedic *Samhitas* and *Nighantus.* Besides these there are more activities are mentioned in our literature. In this study, Ayurvedic Samhita were correlated to the conducted pharmacological screening. Indian gooseberry has been plying a significant role from ancient times in traditional medicine. *Amalaki* has been screened for diverse biological and pharmaceutical investigation from last few years. Different biological activity like antioxidant, antimicrobial, anti-inflammatory, antidiabetic, antitissuive, antiradioprotective, wound healing property and so on.

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