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Review article

Immunity enhancing ability of *Agasthya Harithaki Rasayanaya* with special reference to *Pranavahasrothus Roga* (Respiratory tract Diseases): A review

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Keywords:*Agasthya Harithaki Rasayanaya*, Immunity, *Vyadhi Kshamathwa,* Respiratory disease.

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Abstract

Now a day, there is a pandemic situation in infectious disease of respiratory track and researchers reviewing multi-disciplinary aspects of immune boosting methods in the body and preventive measures of respiratory infections. Proper immune response and pulmonary functions should be restored in case of respiratory infectious disease. *Agasthya Harithaki Rasayanaya* is a famous *Avaleha Kalpana* used to prevent and cure for *Pranavaha Srotasroga* (respiratory disease). *Rasayana* drugs would be improving the physical quality of life by producing best functions of dhatus by tissue nourishment which help to enhance *ojas* and *Vyadhikshamathva.* In Ayurveda concept immunity define as the *Vyadhikshamathwa or shareerabala.* The word *Vyadhi* meaning is diseases, *kshamathwa* mean resist agents the disease. This is a review study to find out the *Agasthya Harithaki Rasayanaya* effects of *Agasthya Harithaki Rasayanaya* on respiratory disease and immunity. The data was collected from authentic texts, websites and previous research findings. Formula of *Agasthya Harithaki Rasayanaya* has 22 ingredients. According to the data it was revealed that *Agasthya Harithaki Rasayanaya* consists of immune boosting herbs in that formula. Out of 22 ingredients, 20 ingredients consist of immunity enhancing properties in the body. It was found that mainly *vathakaphashamana* action prominent in this formula so, this *rasayana* can be used to manage respiratory disease. *Agasthya Harithaki Rasayanaya* can be used as an immune booster for emerging infectious disease in the management of respiratory disease after further studies.

Introduction

Ayurveda is an ancient science of life with the focus on quality of life and also has described a vast number of *Rasayanas drugs* which deals with the prevention of disease and promotion of the health in human beings. They promote both physical and mental health, promote the status of *Dhatus* (tissues), confer immunity & rejuvenate the system. There are 3 types of *Rasayana* viz *kamya, naimittika* and *ajasrika*. *Naimittika rasayana* deals with the diseases & proved for its beneficial role in the patients suffering from chronic diseases [1]. It also helps in promoting the vitality & ability to withstand the devastating effects of the disease. Usually, it is used as adjuvant to the main treatment of the disease and prevention of the disease.

Agasthya Harithaki Rasayanaya is a famous *avaleha* drug used in Ayurvedic medicine mentioned by Sage *Agastya* to prevent and cure for respiratory diseases like *kasa, swasa, hikka, kshaya, penus* and heart diseases [2]. *Avaleha* means semisolid drug preparation with addition of jaggery, sugar/ sugar candy and boiled with decoction. *Avaleha* also mentioned as *rasakriya, leha* and *lehya* (licking form of drugs) [3]. In Ayurveda concept immunity define as the *Vyadhi Kshmathwa* or *sharerabala* and the word *Vyadhi* meaning is diseases or damage to the body and *Kshamathwa* mean resist agents the disease. In the other word *Vyadhi*

Kshmathwa means the resistance power of the body to diseases that is the body immunity.

Purposes of review

1. To find the Pharmacodynamic properties and it's benefits to respiratory disease of *Agasthya Harithaki Rasayanaya.*
2. To find out the immunity enhancing properties of the ingredients of *Agasthya Harithaki Rasayanaya.*

Procedure of Reviewing

Existing data of the *Agasthya Harithaki Rasayanaya* were collected from authentic Ayurveda texts in the Library, Institute of Indigenous Medicine, University of Colombo from January to May 2021 and the data were collected from published research articles, other relevant Ayurveda texts, scientific journals, web sources about *Agasthya Harithaki Rasayanaya*. The collected data were analyzed.

Accordance with present study Pharmacodynamic properties of the ingredients of *Agasthya Harithaki Rasayanaya, Tikta rasa* was prominent (59.09%), *Katurasa (*50%) and *Madhura rasa* (45.45%) were respectively prominent. Prominent *veerya* and vipaka were respectively *Ushnaveerya* (63.63%) and *Katuvipaka* (50%), *Madhura vipaka* (50%).

Outcomes

Table 1. Pharmacodynamic properties of the ingredients of *Agasthya Harithaki Rasayanaya* [4].

Sr. No.	Sanskrit name	Latin name	*Rasa* (Taste)	*Guna* (Quality)	*Veerya* (Potency)	*Vipaka*	*Doshagna* action
1.	*Patala*	*Stereospermumsuaveolens*	*Tikta Kashaya*	*Laghu Ruksha*	*Ushna*	*Katu*	*Tridoshasamaka (Pacify Tridosha)*
2.	*Bilva*	*Aegle marmeloes Linn.*	*Madhura*	*Laghu*	*Sita*	*Madhura*	*Tridoshagna (Balance Tridosha)*
3.	*Gambhari*	*Gmelina arborea Roxb.*	*Tikta Kashaya Madhura*	*Guru*	*Ushna*	*Katu*	*Tridoshasamaka (Pacify Tridosha)*
4.	*Salaparni*	*Desmodiumgangeticum DC*	*Madhura Tikta*	*Guru Snigdha*	*Sita*	*Madhura*	*Tridoshasamaka (Pacify Tridosha)*
5.	*Syonaka*	*Oroxylum indicum*	*Madhura Tikta Kashaya*	*Laghu Ruksha*	*Ushna*	*Katu*	*Kaphavatashamaka (Pacify Kapha* and *vata dosha)*
6.	*Brahati*	*Solanum indicum Linn*	*Katu Tikta*	*Laghu Ruksha Tikshna*	*Ushna*	*Katu*	*Kaphavatashamaka (Pacify Kapha* and *vata dosha)*
7.	*Atmagupta*	*Mucuna prurita*	*Madhura Tikta*	*Guru Snigdha*	*Ushna*	*Madhura*	*Tridoshasamaka (Pacify Tridosha)*
8.	*Agnimantha*	*Premnamucronta*	*Tikta Katu Kashaya Madhura*	*Laghu Ruksha*	*Ushna*	*Katu*	*Kaphavatashamaka (Pacify Kapha* and *vatadosha)*
9.	*Kantakari*	*Solanum surattense*	*Tikta Katu*	*Laghu Ruksha Tikshna*	*Ushna*	*Katu*	*Kaphavatashamaka (Pacify Kapha* and *vata dosha)*
10.	*Prisnaparni*	*Urariapicta Desv*	*Madhura Tikta*	*Laghu Snigdha*	*Ushna*	*Madhura*	*Tridoshasamaka (Pacify Tridosha)*
11.	*Bala*	*Sudacordifolia Linn*	*Madhura*	*Snigdha Guru*	*Sita*	*Madhura*	*Vatapittasamaka (Pacify Vata* and *Pitta dosha)*
12.	*Shankapusphi*	*Convolvulus pluricaulis Choisy*	*Kashaya Katu*	*Snigdha Pichchila*	*Sita*	*Madhura*	*Tridoshahara*
13.	*Gokshura*	*Tribulus terrestis Linn*	*Madhura*	*Guru Snigdha*	*Sita*	*Madhura*	*Vatapittasamaka (Pacify Vata* and *Pitta dosha)*
14.	*Pippalimula*	*Piper longum Linn*	*Katu*	*Tikshna Laghu Snigdha*	*Anusna*	*Madhura*	*Kaphavatashamaka (Pacify Kapha* and *vata dosha)*
15.	*Bharangi*	*Clerodendronserratum Linn*	*Katu Tikta*	*Ruksha Laghu*	*Sita*	*Madhura*	*Kaphavatashamaka (Pacify Kapha* and *vata dosha)*
16.	*Sati*	*Hedychium spicatum*	*Katu*	*Laghu*	*Ushna*	*Katu*	*Vatakaphasamaka*

		Sm in A Rees	*Tikta Kashaya*	*Tikshna*			*(Pacify vata* and*Kapha dosha)*
17.	*Yava*	*Hordeum vulgare Linn*	*Kashaya Madhura*	*Ruksha Guru Pichchila*	*Ushna*	*Katu*	*Kaphahara (Reduce Kapha)*
18.	*Hastipippali*	*Piper chaba Trel & Yunck*	*Katu*	*Ruksha*	*Ushna*	*Katu*	*Vatahara (Reduce Vata)*
19.	*Apamarga*	*Achyranthes aspera Linn*	*Tikta Katu*	*Sara Tikshna*	*Sita*	*Madhura*	*Kaphavatashamaka (Pacify Kapha* and *vata dosha)*
20.	*Haritaki*	*Terminalia chebula*	*Kashaya pradhanalav anavarjitha*	*Laghu Ruksha*	*Ushna*	*Madhura*	*Tridoshahara (Reduce Tridosha)*
21.	*Chitraka*	*Plumbagazeylanica Linn*	*Katu*	*Tikshna*	*Ushna*	*Katu*	*Kaphavatashamaka (Pacify Kapha* and *vata dosha)*
22.	*Puskaramula*	*Inula racemosa Hook*	*Katu Tikta*	*Tikshna Laghu*	*Ushna*	*Katu*	*Vatakaphasamaka (Pacify Vata* and*Kapha dosha)*

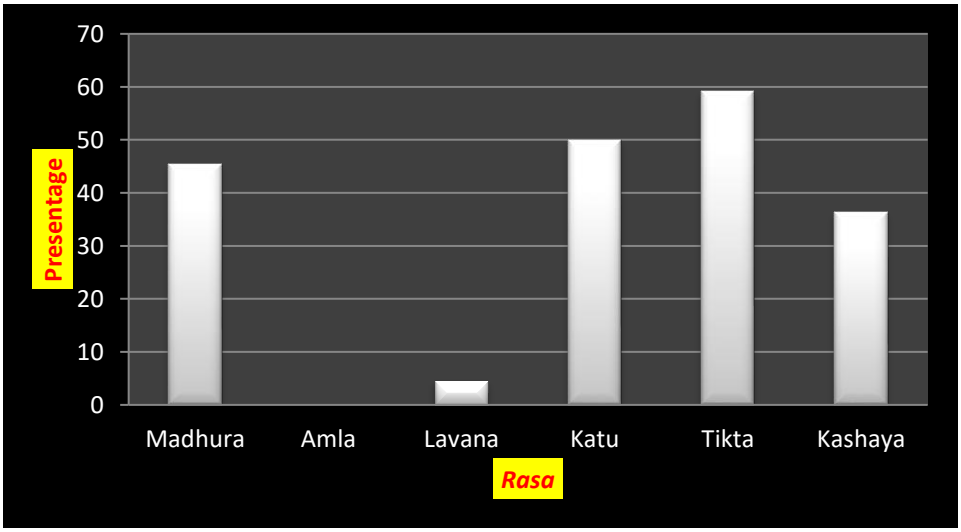


Figure 1. *Rasa* properties of the *Agasthya Harithaki Rasayanaya*
The predominant *Rasa* (taste) was *Tikta Rasa* (59.09%) in *Agasthya Harithaki Rasayanaya*

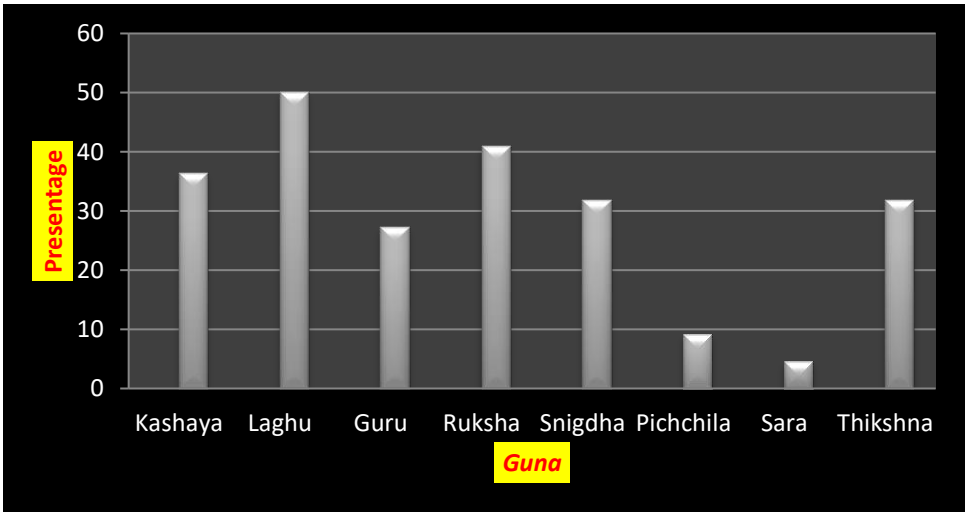


Figure 2. *Guna* properties of the *Agasthya Harithaki Rasayanaya.*
Laghuguna* (Lightness) is the prominent guna in *Agasthya Harithaki Rasayanaya

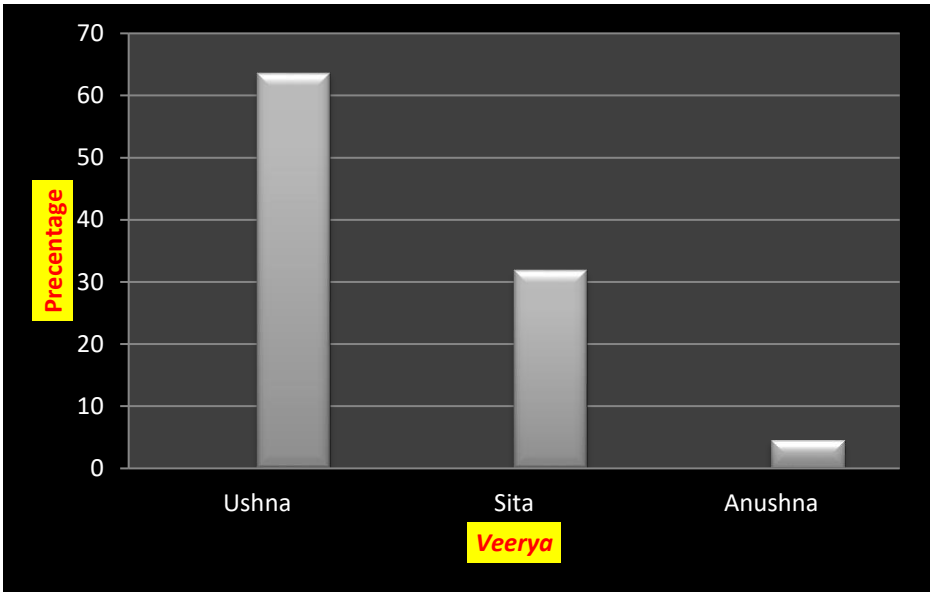


Figure 3. ***Veerya*** **properties of the** ***Agasthya Harithaki Rasayanaya.***
In ***Agasthya Harithaki Rasayanaya*** **prominent** ***Veerya*** **is Ushna** ***Veerya.***

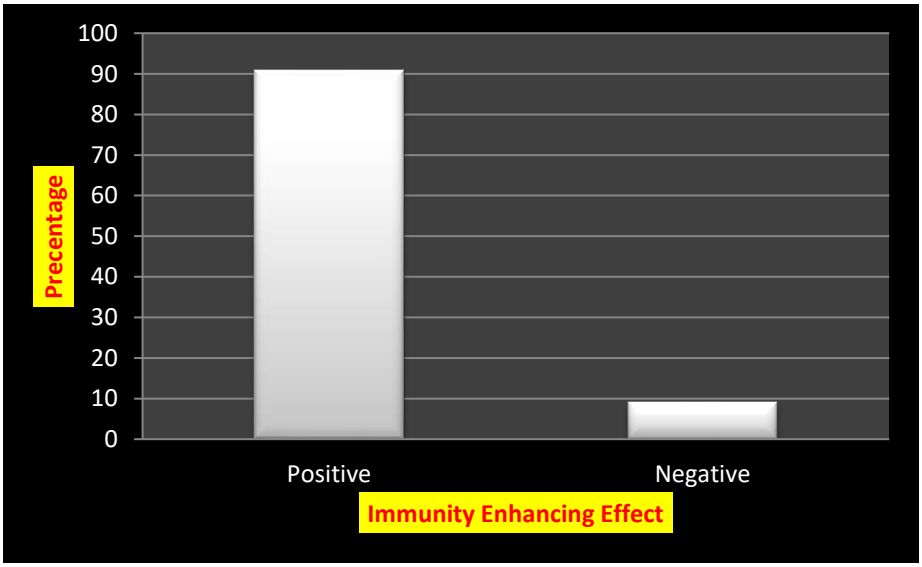


Figure 4. Immunomodulatory action of the ingredients of ***Agasthya Harithaki Rasayanaya.***

Table 2. Immunomodulatory action present/absent in the ingredients of ***Agasthya Harithaki Rasayanaya***

Sr. No	Latin name	Immunomodulatory action (+/-)	References
1.	*Aegle marmeloes Linn.*	+	[4,5]
2.	*Oroxylum indicum(L)*	+	[6]
3.	*Gmelina arborea Roxb.*	+	[7]
4.	*Stereospermumsuaveolens(Roxb)DC*	+	[8,9]
5.	*PremnamucrontaRoxb*	-	
6.	*Desmodiumgangeticum DC*	+	[10]
7.	*UrariapictaDesv*	-	
8.	*Solanum indicum linn*	+	[11]
9.	*Solanum surattense burn*	+	[12]
10.	*Tribulus terrestis Linn*	+	[13]

11.	*Mucuna prurita Wight*	+	[14]
12.	*Convolvulus pluricaulis*	+	[15]
13.	*Hedychium spicatum*	+	[16]
14.	*Sida cordifolia Linn*	+	[17]
15.	*Piper chaba*	+	[18]
16.	*Achyranthes aspera Linn*	+	[19,20]
17.	*Piper longum Linn*	+	[21]
18.	*Plumbagazeylanica Linn*	+	[22]
19.	*Clerodendronserratum Linn*	+	[23]
20.	*Inula racemosa Hook*	+	[24]
21.	*Hordeum vulgare Linn*	+	[25]
22.	*Terminalia chebula Retz*	+	[26,27]

The immunity enhancing effect of *Agasthya Harithaki Rasayanaya*has is 90.90% percentage.

Within the 22 ingredients of the *Agasthya Harithaki Rasayanaya* 20 have the beneficial effect on immunity enhancement. Those ingredients were *Aegle marmeloes, Oroxylum indicum, Gmelina arborea, Stereospermumsuaveolens, Desmodiumgangeticum, Solanum indicum, Solanum surattense burn*, *Tribulus terrestis Linn, Mucuna prurita Wight, Convolvulus pluricaulisChoisy, Hedychium spicatum, Sida cordifolia, Achyranthes aspera, Piper Chaba, Piper longum, Clerodendronserratum, Inula racemose, Hordeum vulgare* and *Terminalia chebula.*

Conversation of outcome

*Agasthya Harithaki Rasayanaya*was predominant in *Tikta* (Bitter) (60%) in taste. With the *Tiktarasa* (Bitter) food items have increased the *vata* in the body. Also tend to facify the *Pitta and Kapha*in the body.

According to the modern science, Immunological activity has been experimentally researched in each plant so that the Immunological activity of it is highlighted. The previous study showed that the *Aegle marmeloes* 25 g leaf extract/kg of feed was found to be competent to enhance optimum immune response by using in freshwater fish (*Catlacatla*) [5].Other study was found the immunological action of the *Aegle marmeloes* [4]. In experimental animal's rats treated with n-butanol fraction (100 mg/kg bw) of *Oroxylum indicum* root bark for 22 consecutive days using measures of immune responses to sheep red blood cells [6]. The previous study was showed the supplementation of *Achyranthes aspera* [19, 20] seeds in diets influenced both nonspecific and specific immunity. In-vivo study of the *Pteridospermsuaveolens* (Roxb.) root extract increased the total leukocyte count and the population of monocyte and neutrophil in rats [9]. Previous study was discovered the immunity enhancing effect of the *Sidacordifolia* [17]. In general, a drug with anti-inflammatory, antibacterial, bronchodilator and immune modulator activity will work in here. While 22 in the ingredients of the *Agasthya Harithaki Rasayanaya* 20 have the beneficial effect on immunity (Table 2). According to Ayurveda, *Vyadikshamathwa* as the capacity of the body act against the strength of the disease and capability of inhibition of diseases manifestation. *Vyadhikshamathwa* depends on *Bala* and *Ojas.* Bala means vital strength of the body and *Ojas* defines supreme essence of all the seven dhatus. Most of the drugs in *Agasthya Harithaki Rasayanaya* are having the dominance of *Tikta and Katu Rasa*, *Laghu* and *Ruksha Guna, Ushna Virya, Katu Vipaka* and *Tridoshahara,* predominantly which can lead to remove the obstructions in the channels in the respiratory system. Moreover, According to *Rasa, Guna, Veerya, Vipaka* concept of it has *Tikta Katu Rasaand Laghu Rukshaguna* increase the *Jataragni* and lead to nourishment of dhatus by *ahararasa* which ultimately leading to get essence of all *saptha dhatu Ojas. Ojowardhaka* ingredients helps to increase the immunity in the body to fight against diseases. *Agasthya Harithaki Rasayanaya can included in the Naimittika Rasayana* according to the Ayurveda concept bcause this type of *rasayana* is indicated for specific diseases. It has *Vatakaphahara* properties which will be benefited to management of*vathakaphajvara* produced by infections in the *pranavahasrothas.* This can be given as an adjuvant along with specific management of the disease and given to fight against a specific respiratory disease as mentioned in Ayurveda. Benefits of *Agasthya Harithki Rasayana* according to the Sri Lankan Ayurveda pharmacopeia, it indicates the respiratory disease viz, cough, asthma, wheeze, tuberculosis, hiccough, Pneumonia, catarrh and heart disease and it can be given as an anti-aging and as an Immune enhancing agent [29].

Conclusion

The present study showed that ingredients of *Agasthya Harithaki Rasayanaya* have immunity enhancing effect and also most of the ingradients in *Agasthya Harithaki Rasayanaya* are having the dominance of *Tikta and Katu Rasa*, *Laghu* and *Ruksha Guna, Ushna Virya, Katu Vipaka* and *Tridoshahara,* predominantly which can help to prevent the respiratory track disorders by removing the obstructions in the channels in the respiratory system. It can be used as an

immune booster for emerging infectious disease in the management of respiratory disease after further studies.

Conflict of Interests

The authors declare that there is no conflict of interests regarding the publication of this review article.

Authors Contribution

All the authors have contributed equally in designing, drafting the manuscript as per the journal submission format. All authors read and approved the final manuscript.

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