

Role of Ayurvedic Drugs in Immunomodulation

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ABSTRACT

Immunomodulators are considered now as one of the most potent tools in the management of health and disease by modern medicine. The modulation of immune response by using Ayurvedic medications as a possible therapeutic measure has now become a subject of scientific investigation. The recent understanding of Circadian rhythms, seasonal variations, different psychological states on immune system, neuro - endocrine – immune axis or the influence of exercise are unfolding many such concepts which are bringing the modern concept closer to the Ayurvedic principles of Vyadhikshamatwa. In Ayurveda Rasayanas having qualities of immunomodulation. Agastya haritaki rasayana one such popular avaleha kalpana used in the pranavaha sroto vikaras like Kasa, Shwasa, Vishmajvara, etc. Most of the ingredients are having -Tikta, Madhura rasa, laghu, ruksha guna, katu vipaka, ushna veerya and having kaphavata shamaka properties. Thus, Agastya Haritaki Rasayana is used in the management of diseases which are mainly vatakapha pradhana. Plays important role in boosting immunity for Fighting and Preventing from COVID-19.

KEYWORDS: Immunomodulator, Rasayana, Agastya haritaki Rasayana, Vyadhikshamatwa, Kasa, Shwasa, COVID19

INTRODUCTION

The modulation of immune response by using Ayurvedic herbal medications as a possible therapeutic measure has now become a subject of scientific investigation. The concept in modern scientific understanding would mean enhancement of immune responsiveness of an organism against a pathogen by nonspecifically activating the immune system using immunomodulatory agents of plant origin. Immunomodulation could provide an alternative to conventional chemotherapy for diseased conditions of impaired immune responses & helps in selection of immunosuppression for autoimmune disorders and rejection in organ transplantations.

Immunomodulators are considered now as one of the most potent tools in the management of health and disease by modern medicine. The more recent understanding of neuro – endocrine – immune axis or the influence of exercise, circadian rhythms, seasonal variations, different psychological states on immune system are unfolding many such issues which are bringing the modern concept closer to Ayurvedic principles of Vyadhi-ksamatva, Ojas and Bala.

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The basic concept of immunomodulation not only existed in *Ayurveda* but is being really practiced by the Ayurvedists for centuries. *Ayurveda* details the concept of immunomodulation by the term “*Rasayana*”. The use of formulation is to enhance the body’s overall natural resistance to the disease causing agent rather than directly neutralising the agent itself. *Ayurveda* propounded the concept of immunity as *Vyadhikshamatwa*. Acharya *Chakrapanidatta* has interpreted the term *Vyadhikshamatwa* as “*Vyadhibala Viroditwa*” i.e. antagonistic to the strength and virulence of disease & *Vyadhi utpadana pratibandhakatwa*² i.e. the capacity to inhibit and bind the causes of disease. *Charaka* has also described *bala* as factor that destroys the *doshas* and disease causing factor.

In Ayurvedic practice, the objective of immune enhancement is achieved through the use of the *Rasayana* and *Vajikarana* therapy, following *Acar Rasayana* measures and also by use of *Ojovardhaka* remedies. *Rasayana* *yogas* possesses immunomodulatory effect like *Chyavanprasha*, *Agastya haritaki rasayana*, *Pippali Rasayana*,

Guduchi, Yashtimadhu, Haridra, Ashwagandha, Tulsi are used. Rasayana working on Respiratory system are best for Prevention of Coronavirus and boosting immune system. Rasayana Chikitsa can be effective in the Prevention as well as reducing symptoms of COVID-19.

Agastya Haritaki Rasayana is an Avaleha preparation, propounded by Sage Agastya used in the pranavaha srotovikaras like kasa, shwasa, vishamajvara. Most important ingredient *haritaki* is having properties of *Tikta madhura* rasa, *laghu ruksha teekshna* guna, *Katu vipaka* and *Ushna veerya* and having *Kaphavata shamaka*³ properties. possesses the qualities of rasayana. used as *nimittika rasayana*. as this yoga indicated in disease like *Kasa* (cough), *Shwasa* (asthma), *Pratishaya* (running or stuffy nose), *Vishamajvara*⁴, which are similar to Coronavirus.

AIMS & OBJECTIVES

The study was taken with a view

- to enlist the ingredients & indication of *Agastya Haritaki Rasayana* from Classical text of Ayurveda
- to enlist the immunological study carried on ingredients of *Agastya Haritaki Rasayana*
- to analyze the properties of *Agastya Haritaki Rasayana*.

METHODOLOGY

A review on concept of Immunomodulation, *Vyadikshamatwa* & *Agastya Haritaki Rasayana* with its ingredients, method of preparation, indications and immunological study conducted on ingredients are collected from Ayurvedic classical texts, contemporary texts, online journals, articles and internet materials has been done.

Table1: Table showing list of drugs with Quantity.⁵

Sl. no	Ingredients	Proportion
1.	<i>Bilva</i> (Rt/st.Bk)	2 pala
2.	<i>Syonaka</i> (Rt/st.Bk)	2 pala
3.	<i>Gambhari</i> (Rt/st.Bk)	2 pala
4.	<i>Patala</i> (Rt/st.Bk)	2 pala
5.	<i>Agnimantha</i> (Rt/st.Bk)	2 pala
6.	<i>Salaparni</i> (pl)	2 pala
7.	<i>Prisniparni</i> (pl)	2 pala
8.	<i>Brhati</i> (pl)	2 pala
9.	<i>Kantakari</i> (pl)	2 pala
10.	<i>Gokshura</i> (pl)	2 pala
11.	<i>Atmagupta</i> (sd)	2 pala
12.	<i>Shankapusphi</i> pl)	2 pala
13.	<i>Sati</i> (Rz)	2 pala
14.	<i>Bala</i> (Rt)	2 pala
15.	<i>Hastippali</i> (Fr)	2 pala
16.	<i>Apamarga</i> (Rt)	2 pala
17.	<i>Pippalimula</i> (Rt)	2 pala
18.	<i>Chitraka</i> (Rt)	2 pala
19.	<i>Bharangi</i> (Rt)	2 pala
20.	<i>Puskaramula</i> (Rt)	2 pala
21.	<i>Yava</i> (Sd)	1 adhaka
22.	<i>Haritaki</i> (P)	100 in number

TABLE 2. Indications of *Agastyaharitaki avaleha*.⁶

S. No	Indication
1.	Vali
2.	Palitya
3.	Varna Ayu Bala vardhana
4.	Kasa

5.	Kshaya
6.	Swasa
7.	Vishamajwara
8.	Gulma
9.	Meha
10.	Grahani
11.	Arsha
12.	Hridroga
13.	Aruchi
14.	Pinasa
15.	Rajayakshma

METHOD OF PREPARATION.⁷

The drugs from the 1 to 20 (from table 1) (2 pala = 96 gm each; Dashmoola 96gm each individual) are coarsely powdered and kept in a vessel.



Pancha adhaka (5*3.072 ltrs=15.360 ltrs) of water is added and qwatha is prepared reducing it to 1/4th (4.8 ltrs)



Yava (1 adhaka=3.072kg) and Haritaki (100 in number) are bundled in a piece of cloth which is immersed by suspension, as in dolayantra. Mixture of Yava and Haritaki is boiled till Yava becomes soft.



Bundle is opened and Yava is discarded.



Jaggery (1 tula=4.2 kg) and Haritaki is added to the decoction and boiled to the required paka.



After paka ghrita & taila (4 pala=192 g each) is added along with the pippali churna (4 pala=192gm). Allowed to cool and finally honey (4 pala=192gm) is added.

The *siddhi lakshana* of the *avaleha* includes *asanna siddhi lakshana* (*Tantumtva, Apsumajjana, Sthirata*) and *Siddha lakshana* (*Piditomodre, Gandhavarnarasodhava, Sukhamarda*).⁸

Table 3: Rasa panchaka of Individual components of Agastyaharitaki Rasayana based on Bhavaprakash Nighantu⁹

S.N	Latin Name	Rasa	Guna	Veerya	Vipaka	Doshagnata
1	<i>Bilva</i> (Rt/st.Bk)	Madhura	Laghu	Sita	Madhura	Tridoshagna
2	<i>Syonaka</i> (Rt/st.Bk)	Madhura Tikta, Kashaya	Laghu, Ruksha	Ushna	Katu	Kaphavatashamaka
3	<i>Gambhari</i> (Rt/st.Bk)	Tikta, Kashaya, Madhura	Guru	Ushna	Katu	Tridoshasamaka
4	<i>Patala</i> (Rt/st.Bk)	Tikta, Kashaya	Lagu, Ruksha	Ushna	Katu	Tridoshasamaka
5	<i>Agnimantha</i> (Rt/st.Bk)	Tikta Katu, Kashaya Madhura	Lagu, Ruksha	Ushna	Katu	Kaphavatasamaka
6	<i>Salaparni</i> (pl)	Madhura Tikta	Guru, Snigdha	Sita	Madhura	Tridoshasamaka
7	<i>Prisniparni</i> (pl)	Madhura tikta	Laghu Snigdha	Ushna	Madhura	Tridoshasamaka
8	<i>Brhati</i> (pl)	Katu, Tikta	Lagu, Ruksha, Tikshna	Ushna	Katu	Kaphavatasamaka
9	<i>Kantakari</i> (pl)	Tikta Katu	Lagu, Ruksha, Tikshna	Ushna	Katu	Kaphavatasamaka
10	<i>Gokshura</i> (pl)	Madhura	Guru, Snigdha	Sita	Madhura	Vatapittasamaka

11	<i>Atmagupta</i> (sd)	Madhura Tikta	Guru, Snigdha	Ushna	Madhura	Tridoshasamaka
12	<i>Shankapusphi</i> pl)	Kashaya, Katu	Snigdha, Picchila	Sita	Madhura	Tridoshahara
13	<i>Sati</i> (Rz)	Katu, Tikta, Kashaya	Laghu, Tikshna	Ushna	Katu	Vatakapha shamaka
14	<i>Bala</i> (Rt)	Madhura	Snigdha, Guru	Sita	Madhura	Vatapitta Samaka
15	<i>Hastipipali</i> (Fr)	Katu	Ruksha	Ushna	Katu	Vatahara
16	<i>Apamarga</i> (Rt)	Tikta Katu	Sara, Tikshna	Sita	Madhura	Kaphavata samaka
17	<i>Pippalimula</i> (Rt)	Katu	Tikshna, Lagu, Snigdha	Anusna	Madhura	Kaphavata samaka
18	<i>Chitraka</i> (Rt)	Katu	Tikshna	Ushna	Katu	Kaphavata samaka
19	<i>Bharangi</i> (Rt)	Katu, Tikta	Ruksha, Laghu	Sita	Madhura	Kaphavata samaka
20	<i>Puskaramula</i> (Rt)	Katu, Tikta	Tikshna, Lagu	Usna	Katu	Vatakapha samaka
21	<i>Yava</i> (Sd)	Kashaya, Madhura	Ruksha, Guru, Picchila	Ushna	Katu	Kaphahara
22	<i>Haritaki</i> (P)	Kashaya pradhana lavana varjita	Lagu, Ruksha	Usna	Madhura	Tridoshahara

Rt/st bk- Root/stem bark, Pl-plant, Sd- Seed, Rz- Rhizome, Fr- Fruit, P-Pulp

Table 4: Study conducted on Pippali and Haritaki

Sl. No	Year	Author	Title	Drug	Result
1.		Deepti Bisht et al	“A Clinical study to evaluate the efficacy of Pippali Rasayana in certain Respiratory disorders”	(Gr-I) (N=15): Pippali Rasayana prepared from Palash Kshara bhavit Pippali for 45 days (Gr-II) (N=12): On respective allopathic drug treatment	PippaliRasayana helps in increasing Hb% and reduction in ESR also showed improvement in frequency and duration of exacerbation. Hence it is very much effective in the management of Respiratory diseases as an adjuvant
2.		E S Sunila & G Kuttan	Immunomodulatory and antitumor activity of Piper longum Linn. and piperine	alcoholic extract of Piper longum (10 mg/dose/animal) as well as piperine (1.14 mg/dose/animal)	Administration could inhibit the solid tumor development in mice induced with DLA cells and increase the life span of mice bearing Ehrlich ascites carcinoma tumor to 37.3 and 58.8%, respectively. increased the total WBC count to 142.8 and 138.9%, respectively, in Balb/c mice.
3.		Pranoti Belapurkar, Pragya Goyal, and Preeti Tiwari-Barua	Imunomodulatory Effects of <i>Triphala</i> and its Individual Constituents: A Review	the model animals were pretreated with 500 mg/kg of aqueous extract orally and challenged with 50 000 CFU of <i>S. typhimurium</i> .	The animals showed $3 \times 10^3/\text{mm}^3$ increase in WBC count and 4% increase in lymphocyte count as compared to saline treated control animals 102% increase in lymphocyte proliferation and 28.87% increase in foot pad thickness as compared to the infected control in DTH test. study concluded that the extract shows its protective effect through its immunomodulatory activity in mice against typhoid

DISCUSSION

Rasayana/Immunomodulator helps to improve digestion and metabolism as well as microcirculations, thus allowing to obtain the best qualities of all *Dhatu*s. *Rasayana* acts on seven *Dhatu*s which further improves the *Oja* which is responsible for producing good immune power in the body. This *Oja* gives immunity to the body by nonspecific way mediated through neutrophils and monocytes and by specific way mediated by B lymphocytes which acts against the virus and bacterial pathogens. Humoral mediated by B lymphocytes become plasma cells and produces immunoglobulin which destroys antigens. Majority of *Rasayana* drugs works on numerous organs by improving their functions by acquiring *Vyadhikshamatva* through its appetizer, digestive, cognition enhancement, antioxidant, adaptogenic and immunomodulators

Based on the properties, the major drugs mentioned in the preparation of the *Agastya Haritaki rasayana* are of *Ushna veerya*. *Tikta Katu*, *Madhuara Kashaya* is the dominant *rasa* present within it. *Laghu Ruksha* and *Tikshna guna* are the major *Guna*. *Katu Vipaka* is the more in number compared to the *Madhura vipaka*. Based on the properties of various ingredients present in *Agastya Haritaki Rasayana*, it has been mentioned in various diseases like- *Kasa*, *Swasa* and *Hikka*. *Laghu guna* is *Lekhana* & *Ropana*¹⁰ in nature whereas *Tikshna guna* is *Sodhana* & *Kaphavatahrut*¹¹. *Laghu Tikshna guna* acts as antagonistic to *gunas* of *Kapha*, normalises the *Kapha*¹². *Ruksha guna* does *Soshana* & is *Kaphahara*¹³. *Katu rasa* combats the *Kapha*, clears the obstruction in the *Srotas* and does *Sodhana*¹⁴ whereas *Kashaya rasa* does alleviation of the *Kapha* and *Pitta* disorders along with the *Sodhana* effect. *Tikta rasa* has the property of the *Lekhana* and *Kanta-sodhana*¹⁵. *Ushna veerya* drugs are *Agnimahabhoota* dominant and contribute to *Pachana*, *Liquification* of *Kapha*¹⁶, are a potent *Vatakapha samaka*. it helps in reversing the pathophysiology of *swasa roga*. Most of the *dravyas* in *Agastya Haritaki rasayana* are of *Tridosha samaka* and of *Vatakapha* pacifying in nature. In *Kaphaj* type of *Kasa* it will be more beneficial since the drugs enlisted are of *Kaphavata samaka*¹⁷ along with *Tridoshahara*. It can also be given as the adjuvant therapy, as *Naimittika rasayan* which helps in preventing the disease to become more chronic and thus prevents any damage to the involved tissues as well as recurrence of the disease.

Pranavaha Srotas carries *Pranavayu*, in connection (*moolsthna*) with *Hruday* (heart) and *Dashadhamanis*. In COVID-19 the Respiratory

system mainly get affected which is evident from its symptoms like cold, cough and breathlessness. Here the drugs working on Respiratory system and strengthening its functions can be useful. For boosting immune system for Prevention of Coronavirus *Agastya Rasayana* & *Pippali Rasayana* are the best *Rasayana* working on *Pranavaha Srotas* (Respiratory system). can be used due to their antipyretic, antiallergic, immunomodulatory, anti-inflammatory and analgesic properties. *Kantakari* (*Solanum surattense* Burm. F.), *Pushkarmool* (*Inula racemosa* Hook. f.), *Haritaki* (*Terminalia chebula* Retz), *Pippali* (*Piper longum* Linn.), *Tulsi* (*Ocimum sanctum* Linn), & *Brihati* (*Solanum indicum* Linn.) can be used in *Pranavaha Strododushti* for strengthening it.

CONCLUSION

Health is defined as a “state of complete physical, mental and social well-being and not merely an absence of disease or infirmity to lead a socially and economically productive life”. *Ayurveda* can be used effectively in the management of immune-compromised conditions like acquired immune deficiency syndrome (AIDS), Tuberculosis and malignancy. The *Rasayana* therapy makes it easily possible with its remarkable benefits on immunity, health, longevity, regeneration of cells and tissues in the body. *Rasayana* as immunomodulator herbs are perhaps the only drug that can be taken securely for long period, even in a healthy state, without any specific contradictions. Acharyas described many *Rasayana* formulations that increase the life span and refers to them as *Ayuskara*. *Rasayana* therapy has various beneficial effects on our body like *Jaravyadhi Nashana*, promotion of body strength including immunity, promotes body tissues and alleviation of disorders. Immunomodulators corrects the immune functioning that is out of balance. The immunomodulators have ability to stimulate natural and adaptive defence mechanism of the body that can be helpful in boosting immunity for Prevention of COVID-19.

Rasayanas are effective in enhancing immunity of the body. *Agastya haritaki Rasayana* working on Respiratory system helps in strengthening function of Respiratory organs as well as reducing symptoms of Respiratory disorders. Immunity plays an important role in Prevention of diseases. So, it can be concluded that *Rasayana Chikitsa* can be effective in the Prevention as well as reducing symptoms of COVID-19. *Agastya Haritaki Rasayana*; a popular *Avaleha kalpana*, works at various levels including *Dhatu*s, *Agni* & *Srotas*, improving the *Vyadhikshmatva* of the body. The methods of preparation, ingredients and indication are almost similar with few differences in

classical texts. Most of the diseases mentioned in phalashruti are of *Vatakapha pradhana* type & the ingredients in *Agastya Haritaki Rasayana* have *Vatakapha samana* and *Tridosahara* properties. Based on *Gunakarma* and *Doshakarma* of the drug; it can be used as main line of treatment in disease as well as *Naimittika Rasayana* to boost up the immunity and cure the diseases in faster & better way. Concepts of *Naimittika Rasayana* bring a new dimension into the health care and promote an integrated approach between different modalities in the field of medicines. Further research work can be taken to analyze the potent *Agastya Haritaki Rasayana*, as mentioned in different classical texts.

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