



IJAYUSH
International Journal of AYUSH
AYURVEDA, YOGA, UNANI, SIDHA AND HOMEOPATHY
<http://internationaljournal.org.in/journal/index.php/ijayush/>

International Journal
Panacea
Research library
ISSN: 2349 7025

Review Article

Volume 14 Issue 03

March 2025

A REVIEW ON PHARMACODYNAMIC BEHAVIOR OF *RASAYAN DRAVYA*

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Abstract

Ayurveda *Rasayana* drugs are utilized as dietetic and therapeutic interventions to improve immunity, longevity and imparts rejuvenating effect. The therapeutic approaches of *Rasayana Chikitsa* mainly directed to retard aging and improve the quality of life. Ayurveda mentions several individual and combination *Rasayana* with strong biological activities, such as immunomodulation, anti-stress, nutritive and free-radical scavenging properties that contribute to health enhancement and disease management. *Rasayana* therapy is of prime importance in attaining these objectives by enhancing vitality, intelligence and immunity, etc. It promotes quality of *Rasa Dhatus*, builds up the body's core functions and retards early indications of aging. *Rasayana* is not merely a pharmacological therapy but an integrated program that involves rejuvenating drugs, dietary regulations and behavioral disciplines in the form of *Achar Rasayana*. This review article explores pharmacodynamic behavior of *Rasayan Dravya* which contributed towards their therapeutic actions.

Key-Words: *Ayurveda, Pharmacodynamic, Rasayan, Rejuvenating, Dravyagun*

Introduction

Disease refers to a state of disturbance of ease or absence of physical or mental well being. The *Vedas*, being the earliest human source of knowledge, have mentioned medicinal herbs, specifically in the *Atharvaveda*. Amongst them many herbs or medicinal substances belongs from *Rasayana* category. *Rasayana Tantra* is one of the eight sections of Ayurveda and deals with rejuvenation and longevity [1-3]. They are considered useful for overall health maintenance and prevention of disease. *Rasayanas* aid in prolonging life, strengthening immunity and improves memory, etc. They also enhance luster, complexion, voice, speech and improve functioning of sensory organs. The *Rasayana* drugs categorizes into two types based on their therapeutic utility as mentioned in **Figure 1** [3-5].

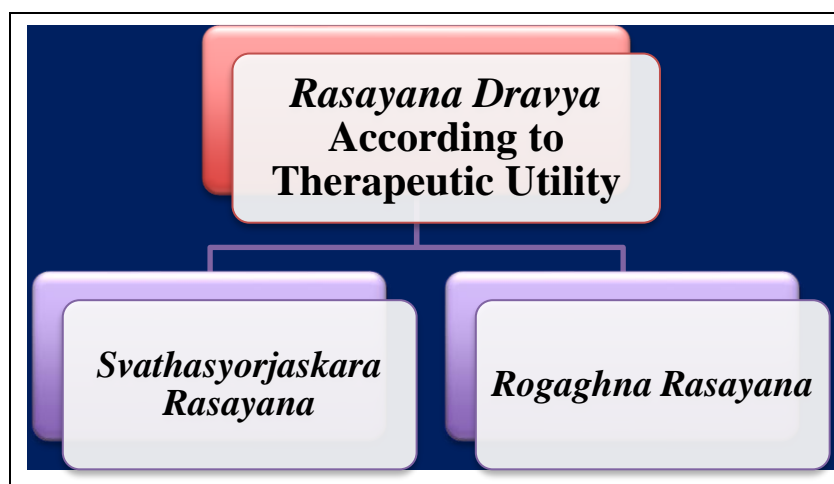


Figure 1: Types of *Rasayana Dravya* based on their Therapeutic Utility

Svathasyorjaskara Rasayana enhances immunity in healthy persons and *Rogaghna Rasayana* assists in treating and managing a range of diseases. Therefore, *Rasayana* therapy is important in prevention of disease and imparting overall rejuvenation effect. *Rasayana* medicines increase strength and immunity in healthy persons are usually grouped under *Vrishya* therapy. **As per scope *Rasayana* therapy may be put in the category of *Kamya-Rasayana*, which is employed in healthy individuals for additional encouragement of health. It is further sub-divided into; *Pranakamya*, *Srikamya* and *Medhakamya*. *Pranakamya* causes longevity, *Srikamya* induces body luster and *Medhakamya* enhances memory & intelligence. These *Rasayana* acts by different mechanism or pharmaco-dynamic behavior as mentioned below.**

Pharmaco-dynamic Effects of Rasayana Drugs:

Several studies conducted on *Rasayana* medicines to claimed their apoptogenic, antioxidant, immune-modulator, nootropic, nutraceutical and anti-stress activities. *Rasayana* exhibited these actions by virtues of their **pharmaco-dynamic behavior as mentioned in Table 1 [4-6]**.

Table 1: Pharmaco-dynamic actions of Rasayana Dravyas

Category	Pharmaco-dynamic Actions	Examples of Rasayana Drugs
Immunomodulator	Substances that enhance or suppress immune responses by regulating the production of antibodies or sensitized cells that recognize and react with antigens.	<i>Vasa, Shatavari, Punarnava, Haridra, Vidang, Yashtimadhu and Ashwagandha.</i>
Adaptogen	Natural herbs that enhance the body's ability to cope with physical and mental stressors, improving resilience to anxiety, fatigue, or trauma.	<i>Ashwagandha, Kalmegh, Yashtimadhu, Shatavari, Tulsi, Pipul, Guduchi, Amla, Haritaki and Bala.</i>
Antioxidant	Compounds that inhibit oxidative stress and prevent cellular damage caused by free radicals, reducing the risk of neurodegenerative diseases and chronic inflammation.	<i>Triphala, Guggulu, Haridra, Brahmi, Vacha, Malkangani and Shankhpushpi.</i>
Nootropic Action	Substances that enhance cognitive functions, intelligence and memory by supporting neurological health.	<i>Mandukparni, Guduchi, Yashtimadhu and Shankhpushpi.</i>

Rasayana therapy is of prime importance in *Vyadhikshamatva* due to its *Dipana, Pachana, Medhya* and *immunomodulatory* actions. The multiplicity of the biological activities of *Rasayana* drugs renders them therapeutically important in fostering general health and longevity.

Activity of Rasayana through Ayurvedic Properties:

The effectiveness of *Rasayana* drugs is also determined by their *Guna*, *Rasa*, *Virya* and *Vipaka* as mentioned in **Table 2** [6-9].

Table 2: Properties of Rasayana and their Role in Pharmacodynamic Actions:

Ayurvedic Property	Sub-Types	Role in Biological System	Example
<i>Guna</i>	<i>Laghu</i>	Improves digestion and prevents <i>Ama</i> .	<i>Amalaki</i>
	<i>Snigdha</i>	Nourishes <i>Dhatus</i> , prevents degeneration.	
	<i>Guru</i>	Provides strength and stability to bones.	
	<i>Mridu</i>	Enhances cell regeneration.	
	<i>Picchila</i>	Lubricates and nourishes body tissues.	
<i>Rasa</i>	<i>Madhura</i>	Enhances <i>Ojas</i> and promotes longevity.	<i>Guduchi</i>
	<i>Amla</i>	Improves digestion and absorption.	
	<i>Kashaya</i>	Tones tissues and improves complexion.	
	<i>Tikta</i>	Detoxifies and removes <i>Ama</i> .	
<i>Virya</i>	<i>Sheeta</i>	Pacifies <i>Pitta</i> and reduces inflammation.	<i>Shatavari</i>
	<i>Ushna</i>	Boosts metabolism and enhances digestion.	
<i>Vipaka</i>	<i>Madhura</i>	Increases longevity and nourishes tissues.	<i>Haritaki</i>
	<i>Katu</i>	Stimulates metabolism and digestion.	

Additionally 28 *Dravya* are mentioned as *Rasayan* in *Bhavprakash Nighantu* their pharmacodynamic behavior is depicted in **Table 3**. These *Rasayana* herbs are responsible for regulating the balance of *Vata*, *Pitta*, and *Kapha*, hence restoring equilibrium within the

body. They have rejuvenating qualities that feed the tissues of the body, boosts *Ojas* and retard aging. Most of these herbs lend strength, immunity, and nutrition to the body, promoting muscular, bone, and nerve health. Some of the herbs like *Shankhapushpi*, *Brahmi*, and *Mandukparni* are used as cognitive enhancers, enhancing mental abilities. Others like *Shatavari*, *Ashwagandha*, and *Vidarikanda* enhance reproductive vitality and health. Blood purifiers like *Manjishtha*, *Guduchi*, and *Bakuchi* detoxify the blood and keep the skin healthy. Also, digestive and metabolic benefits are derived from the use of herbs like *Pippali*, *Rason*, and *Guggulu*, which enhance stimulation of digestion and maintenance of fat metabolism by virtue of their *Deepana* and *Medohara* effects respectively.

Table 3: Ayurvedic and pharmacodynamic properties of *Dravya* mentioned as *Rasayan* in *Bhavprakash Nighantu*

S. No.	<i>Dravya</i>	<i>Rasa</i>	<i>Guna</i>	<i>Virya</i>	<i>Vipaka</i>	<i>Prabhava / Specific Action</i>
1	<i>Haritaki</i>	<i>Kashaya, Madhura, Amla, Katu, Tikta</i>	<i>Laghu, Ruksha</i>	<i>Ushna</i>	<i>Madhura</i>	<i>Tridoshaghna, Rasayana, Virechana</i>
2	<i>Aamalaki</i>	<i>Amla (Dominant), Madhura, Tikta, Kashaya</i>	<i>Guru, Ruksha</i>	<i>Shita</i>	<i>Madhura</i>	<i>Vayasthapana, Tridoshaghna, Rasayana</i>
3	<i>Pippali</i>	<i>Katu</i>	<i>Laghu, Tikshna</i>	<i>Ushna</i>	<i>Madhura</i>	<i>Deepana, Rasayana, Vata-Kapha Shamaka</i>
4	<i>Manjishtha</i>	<i>Tikta, Kashaya</i>	<i>Laghu, Ruksha</i>	<i>Ushna</i>	<i>Katu</i>	<i>Raktashodhaka, Rasayana, Varna Prasadaka</i>
5	<i>Rasanjan (Daruharidra)</i>	<i>Tikta</i>	<i>Ruksha, Laghu</i>	<i>Ushna</i>	<i>Katu</i>	<i>Raktaprasadaka, Netrahitakara, Rasayana</i>
6	<i>Bakuchi</i>	<i>Tikta, Katu</i>	<i>Laghu, Ruksha</i>	<i>Ushna</i>	<i>Katu</i>	<i>Kushtaghna, Twachya, Rasayana</i>

S. No.	Dravya	Rasa	Guna	Virya	Vipaka	Prabhava / Specific Action
7	<i>Guggulu</i>	<i>Tikta, Katu</i>	<i>Laghu, Snigdha, Tikshna</i>	<i>Ushna</i>	<i>Katu</i>	<i>Lekhana, Medohara, Rasayana</i>
8	<i>Guduchi</i>	<i>Tikta</i>	<i>Guru, Snigdha</i>	<i>Ushna</i>	<i>Madhura</i>	<i>Rasayana, Balya, Jwaraghna</i>
9	<i>Gambhari</i>	<i>Madhura, Kashaya</i>	<i>Guru, Snigdha</i>	<i>Shita</i>	<i>Madhura</i>	<i>Balya, Rasayana, Pushtikaraka</i>
10	<i>Shalparni</i>	<i>Madhura</i>	<i>Guru, Snigdha</i>	<i>Ushna</i>	<i>Madhura</i>	<i>Balya, Rasayana, Shothahara</i>
11	<i>Vidarikanda</i>	<i>Madhura</i>	<i>Guru, Snigdha</i>	<i>Shita</i>	<i>Madhura</i>	<i>Shukrala, Rasayana, Balya</i>
12	<i>Talmuli</i>	<i>Madhura, Tikta</i>	<i>Guru, Snigdha</i>	<i>Shita</i>	<i>Madhura</i>	<i>Balya, Rasayana, Ojo Vardhaka</i>
13	<i>Shatavari</i>	<i>Madhura, Tikta</i>	<i>Guru, Snigdha</i>	<i>Shita</i>	<i>Madhura</i>	<i>Stanyajanana, Rasayana, Vrushya</i>
14	<i>Mahashatavari</i>	<i>Madhura, Tikta</i>	<i>Guru, Snigdha</i>	<i>Shita</i>	<i>Madhura</i>	<i>Rasayana, Shukrala, Stanyavardhaka</i>
15	<i>Ashwagandha</i>	<i>Tikta, Katu, Madhura</i>	<i>Laghu, Snigdha</i>	<i>Ushna</i>	<i>Madhura</i>	<i>Balya, Rasayana, Nidrajanaka</i>
16	<i>Vruddhadaru</i>	<i>Tikta, Katu, Kashaya</i>	<i>Laghu, Ruksha</i>	<i>Ushna</i>	<i>Katu</i>	<i>Vatahara, Rasayana, Balya</i>
17	<i>Kumari</i>	<i>Tikta</i>	<i>Guru, Snigdha</i>	<i>Ushna</i>	<i>Katu</i>	<i>Rasayana, Vranashodhaka, Pittahara</i>
18	<i>Bhringraj</i>	<i>Tikta, Katu, Kashaya</i>	<i>Laghu, Ruksha</i>	<i>Ushna</i>	<i>Katu</i>	<i>Keshya, Rasayana, Vayasthapana</i>
19	<i>Kakmachi</i>	<i>Tikta, Kashaya</i>	<i>Laghu</i>	<i>Ushna</i>	<i>Katu</i>	<i>Rasayana, Chakshushya, Deepana</i>

S. No.	<i>Dravya</i>	<i>Rasa</i>	<i>Guna</i>	<i>Virya</i>	<i>Vipaka</i>	<i>Prabhava / Specific Action</i>
20	<i>Somalata</i>	<i>Tikta, Kashaya</i>	<i>Laghu, Ruksha</i>	<i>Ushna</i>	<i>Katu</i>	<i>Medhya, Rasayana, Balya</i>
21	<i>Shankhpushpi</i>	<i>Tikta, Kashaya</i>	<i>Laghu, Snigdha</i>	<i>Shita</i>	<i>Madhura</i>	<i>Medhya, Rasayana, Balya</i>
22	<i>Brahmi</i>	<i>Tikta</i>	<i>Laghu, Snigdha</i>	<i>Shita</i>	<i>Madhura</i>	<i>Medhya, Rasayana, Smriti Vardhaka</i>
23	<i>Mandukparni</i>	<i>Tikta, Kashaya</i>	<i>Laghu, Snigdha</i>	<i>Shita</i>	<i>Madhura</i>	<i>Medhya, Rasayana, Twachya</i>
24	<i>Tilak</i>	<i>Tikta, Kashaya</i>	<i>Laghu, Snigdha</i>	<i>Shita</i>	<i>Madhura</i>	<i>Rasayana, Vayasthapana, Twachya</i>
25	<i>Bijak</i>	<i>Tikta, Kashaya</i>	<i>Laghu, Ruksha</i>	<i>Shita</i>	<i>Katu</i>	<i>Twachya, Rasayana, Raktashodhaka</i>
26	<i>Shalmali</i>	<i>Madhura, Kashaya</i>	<i>Guru, Snigdha</i>	<i>Shita</i>	<i>Madhura</i>	<i>Balya, Rasayana, Vranaropaka</i>
27	<i>Varahikanda</i>	<i>Madhura</i>	<i>Guru, Snigdha</i>	<i>Shita</i>	<i>Madhura</i>	<i>Shukrala, Rasayana, Vrishya</i>
28	<i>Rason (Garlic)</i>	<i>Katu, Tikta, Madhura</i>	<i>Laghu, Tikshna</i>	<i>Ushna</i>	<i>Katu</i>	<i>Rasayana, Medohara, Deepana</i>

Modern Aspect on Pharmacodynamic:

Rasayana drugs stimulate cell-mediated immunity through enhanced macrophage function, modulation of the Th1/Th2 response, and augmented neutrophil adhesion. These drugs enhance antioxidant enzymes like glutathione peroxidase and suppress DPPH free radicals, providing protection against oxidative damage. *Rasayanas* improve cognitive functions by modulating acetylcholine neurotransmission, enhancing motor activity and inhibiting stress-induced cognitive impairment. These drugs reduce radiation-induced damage by exhibiting antioxidant, metal chelating and anti-inflammatory activities. By augmenting humoral and cellular immunity, they suppress inflammation and enhance the

defense mechanism. *Rasayanas* have anti-stress activity due to their defense mechanism against oxidative stress and free radicals. These medicines stimulate tumor suppressor proteins like p53 and pRB and exhibit antitumor activity. Certain *Rasayana* medicines are testosterone-like in their effects, inducing rejuvenation and vitality [10].

Conclusion

Ayurvedic *Rasayana* medicines are considered useful in disease prevention and their treatment. Clinical evidence and studies have proven their value in symptom relief and retardation of the disease process. The pharmacological activity of *Rasayana* is guided by its *Guna, Rasa, Virya* and *Vipaka*, which help in *Dhatu Poshana*, imparts *Agni Deepana* effect, eliminating toxins by their *Ama Pachana* effect and boosts *Ojas* by virtue of their *Bala Vriddhi* effect. *Rasayana* therapy produces *Dipana, Pachana, Medhya* and immunomodulatory activities. They also offer antioxidant, nootropic and adaptogenic actions. These effects of *Rasayana* drugs is mainly due to their properties such as; *Guna, Virya, Vipaka* and *Rasa*, which determine their biological interactions.

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