1 2 3 4	PHARMACODYNAMICS OF NAVAYAS CHURNA: A DETAILED EXPLORATION OF ITS THERAPEUTIC MECHANISMS AND APPLICATIONS
5	ABSTRACT
6	BACKGROUND
7 8 9 10 11	Ayurveda is one of the oldest branches of knowledge and a system of philosophical principles. Ayurvedic practitioners have effectively used numerous classical formulations to treat a wide range of ailments. In many cases, detailed information about their mechanisms of action is still lacking. <i>Navayas Churna</i> is one of them. It is a herbo-metallic preparation ( <i>Rasaushadhi</i> ) commonly used by Ayurvedic practitioners.
12 13 14	According to the World Health Organization, Ayurvedic medicines fall under the category of traditional medicine. These medicines are used for the prevention of illness, diagnosis, treatment and promotion of health.
15 16 17 18 19 20	Understanding the pharmacodynamics of Ayurvedic drugs is essential for the scientific validation of their traditional uses. It helps to explain how these formulations interact with the body and ensures safety by predicting potential side effects. This knowledge also aids in optimizing formulations, guiding evidence-based drug development and meeting global regulatory standards. Especially for complex preparations, such as herb-metallic compounds, pharmacodynamic insights are crucial for integrating Ayurveda into modern healthcare.
<ul><li>21</li><li>22</li><li>23</li></ul>	The present study aims to compile the available literature regarding the pharmacodynamics, therapeutic mechanism, actions and properties of the <i>Navayas Churna</i> .
24	KEYWORDS: Ayurveda, Rasaushadhi, Navayas Churna, Pharmacodynamic
25	INTRODUCTION
26 27 28 29 30	Ayurveda, the traditional medical science of India, not only focuses on diagnosing and treating diseases but also emphasizes maintaining health through proper lifestyle practices. Its holistic approach aims at both curing ailments and promoting long-term wellness. Ayurvedic practitioners are empowered to choose the most appropriate therapeutic methods to achieve these goals. According to the World Health Organization, approximately 70% of the population
31 32 33 34	in developing countries relies on herbal or traditional medicine for their primary healthcare needs <sup>[1]</sup> . Traditional systems like Ayurveda are also gaining popularity in developed nations. In India, Ayurveda has been practiced since the Vedic period, with a wide variety of formulations that are considered safe, effective and associated with fewer side effects <sup>[2][3]</sup>

- 35 Ancient Ayurvedic scholars emphasized that a physician's success largely depends on their in -
- depth knowledge of medicinal substances. Ayurveda advocates the use of both plant and
- 37 mineral-based remedies for managing various health conditions [4]. The pharmacodynamics of
- 38 Ayurvedic drugs is crucial for explaining how they act at the molecular, cellular and systemic
- 39 levels, impacting key physiological processes such as metabolism, immune function and blood
- 40 formation.
- 41 Pharmacodynamic insights play a vital role in developing evidence-based Ayurvedic or
- 42 integrative formulations, especially for managing chronic and lifestyle-related diseases. The
- action of a drug in the body is believed to be governed by the five fundamental principles
- 44 known as Rasa Panchaka namely Rasa, Guna, Virya, Vipaka and Prabhava. These factors,
- 45 individually or collectively, influence the body by balancing the doshas, correcting *Dathu*
- 46 Pradooshana and supporting overall health, Swasthahitha.
- 47 Navayas Churna is a classical Ayurvedic herbo-mineral formulation, traditionally used for its
- 48 potent therapeutic properties. The name itself holds significance Nava refers to the nine
- 49 ingredients used in its composition, while Ayas denotes iron, indicating the inclusion of
- 50 processed iron in the form of *Loha Bhasma*. This formulation combines nine medicinal herbs
- with Loha bhasma, creating a synergistic blend that enhances its efficacy in treating a wide
- 52 range of disorders. Navayas Churna is primarily indicated in the management of Pandu
- 53 (Anemia) due to its hematinic and blood-purifying properties. In addition, it is widely used in
- 54 treating Hridroga, Bhagandara, Shotha, Kustha, Udara, Arsha, Mandagni, Aruchi and Krimi
- 855 Roga. This formulation is described in detail by Acharya Sharangadhara in the Churna Kalpana
- 56 Adhyaya of the Sharangadhara Samhita, an authoritative classical text on Ayurvedic
- 57 pharmaceutics. The unique combination of herbs and mineral components in *Navayas Churna*
- 58 reflects the traditional principle of combining ingredients to enhance both efficacy and safety of
- 59 formulation. [5]

## 60 AIM & OBJECTVES

- 61 AIM
- 62 To review the pharmacodynamics, therapeutic mechanism and applications of *Navayas Churna*.
- 63 OBJECTIVES
- The objective of this study is to review the therapeutic actions of *Navayas Churna* by examining
- 65 the individual functions of its ingredients and exploring their pharmacodynamic properties. This
- 66 analysis aims to provide a deeper understanding of how the combined components work
- 67 synergistically to exert their medicinal effects, thereby supporting the formulation's traditional
- 68 uses and guiding future research.

#### MATERIALS AND METHODS

- 70 Literary resources, including classical texts and contemporary studies, have been studied
- 71 extensively. All relevant information available from both traditional literature and online sources
- has been gathered and thoroughly analyzed to facilitate a comprehensive and conclusive
- 73 discussion.

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Sr No	Ingredient	Botanical Name	Family	Quantity
1	Chitrak	Plumbago zeylanica	Plumbaginaceae	1 part
2	Haritaki	Terminalia chebula	Combretaceae	1 part
3	Amalaki	Embelica officinalis	Euphorbiaceae	1 part
4	Bibhitak	Terminalia bellerica	Combretaceae	1 part
5	Musta	Cyperus rotundus	Cyperaceae	1 part
6	Vidanga	Embelia ribes	Myrsinaceae	1 part
7	Shunthi	Zingiber officinale	Zingiberaceae	1 part
8	Maricha	Piper nigrum Linn.	Piperaceae	1 part
9	Pippali	Piper longum Linn.	Piperaceae	1 part
10	Loha Bhasma	-	-	9 parts

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- 75 Table 1 Ingredients of Navayas Churna
- 76 Method of preparation of *Navayas Churna* 
  - All the herbal ingredients listed in Table 1 were thoroughly cleaned to remove any foreign materials.
    - Individually powdered until they pass through a 100 no. Mesh sieve.
    - The required quantities of each powdered herb were accurately weighed.
    - All ingredients were mixed thoroughly to ensure a homogeneous blend.
    - An equal amount of *Lauha Bhasma* was then added to this mixture.
  - Trituration was carried out to get a homogeneous mixture.
- 84 Anupana Madhu (honey), Ghrita (ghee), Gomutra, Takra (buttermilk)

Sr No	Ingredient	Rasa	Guna	Virya	Vipaka
1	Chitrak <sup>[6]</sup>	Katu	Laghu, Ruksha,	Ushna	Katu
			Tikshna		
2	Haritaki <sup>[7]</sup>	Lavanavarjita	Laghu, Ruksha	Ushna	Madhur
		Pancharasa			
3	Amalaki <sup>[8]</sup>	Lavanavarjita	Laghu, Ruksha,	Shita	Madhur
		Pancharasa	Shita		
4	Bibhitak <sup>[9]</sup>	Kashaya	Laghu, Ruksha	Ushna	Madhur
5	Musta <sup>[10]</sup>	Tikta, Katu, Kashaya	Laghu, Ruksha	Shita	Katu

6	Vidanga <sup>[11]</sup>	Katu, Kashaya	Laghu, Ruksha,	Ushna	Katu
			Tikshna		
7	Shunthi <sup>[12]</sup>	Katu, Tikta	Ruksha, Laghu,	Ushna	Katu
			Tikshna		
8	Maricha <sup>[13]</sup>	Katu, Tikta	Laghu, Tikshna	Ushna	Katu
9	Pippali <sup>[14]</sup>	Katu	Laghu, Snigdha,	Anushna	Madhur
			Tikshna	Shita	
10	Loha Bhasma	Tikta, Madhur,	Guru, Ruksha	Shita	Madhur
	[15]	Kashaya			

Table 2: Constituents of *Navayasa Churna* with *Rasa* (Taste), *Guna* (Attribute), *Virya* (Potency), *Vipaka* (Internal biotransformation of drug)

Sr No	Ingredient	Doshaghnata	Karma		
1	Chitrak	Kapha Vat	Lekhan, Uttejaka, Deepan, Pachan, Saraka, Grahi, Rasayan,		
		Shamaka	Krumighana, Shothahara, Kaphghana, Kanthya,		
			Jwaraghana, Arshoghana,		
2	Haritaki	Tridoshahar	Shothahara, Vedanasthapak, Vranropaka, Anulomaka,		
			Mrudurechaka, Kushthaghana, Jwaraghana, Deepan,		
			Pachan, Krumighana, Rasayan, Hrudya, Shothahara		
3	Amalaki	Tridoshahar	Dahaprashamak, Chakshushya, Deepan, Anulomaka,		
			Rochan, Hrudya, Shonisthapan, Jwaraghana,		
			Kushthaghana, Rasayan, Aruchi, Shothaghana,		
4	Bibhitak	Tridoshahar	Shothahara, Vedanasthapak, Deepak, Anulomaka,		
			Krumighana, Arshoghana, Raktastambhaka, Jwaraghana		
5	Musta	Kapha Pitta	Twachadoshahar, Shothahara, Lekhan, Deepan, Pachan,		
		Shamak	Medhya, Raktaprasadak, Mutrala, Balya, Vishaghana,		
			Jwaraghana, Aruci, Ajirna, Krumighana,		
6	Vidanga	Kapha Vat	Jantughana, Kushthaghana, Deepan, Pachan, Anulomak,		
		Shamak	Raktashodhak, Mutrajanana, Varnya, Rasayan, Balya		
7	Shunthi	Kapha Vat	Shothahara, Vedanashamak, Deepan, Pachan, Rochan,		
		Shamak	Arshoghana, Shulaprashamana, Hrudya, Shothahara,		
			Raktashodhaka, Jwaraghana,		
8	Maricha	Vat Kapha	Lekhan, Balya, Deepan, Pachan, Krumighana, Kushtaghana,		
		Shamak	Ajirnahar, Hrudya, Jwaraghana		
9	Pippali	Pittashamaka	Krumighana, Deepan, Pachan, Shulahara, Raktavardhaka,		
			Kushtaghana, Rasayan, Jwaraghana, Hrudya, Paduhara		
10	Loha	Tridoshaghna	Rasayan, Vishaghana, Pandughana, Shulaghana,		
	Bhasma		Krumighana, Kushthaghana, Shothaghana, Hrudya,		
			Arshoghana,		

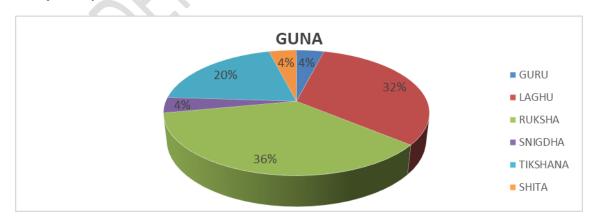
Table 3 Ingredients of *Navayas Churna* with their *Doshaghnata* (Action on Dosha) and *Karma* (Functions)

Sr No Ingredient	Therapeutic Action
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1	Chitrak	anti-diabetic, wound healing, anti-carcinogenic activity, contraceptive effect, hepato-protective, anthelmintic, anti-microbial, anti-inflammatory.  [16]
2	Haritaki	antimicrobial, hepatoprotective, anti-mutagenic, anti-inflammatory, antioxidant, anti-diabetic, anti-proliferative, radio-protective, cardio-protective [17]
3	Amalaki	immune-modulating, anti-diabetic, memory enhancement, antioxidant, anti-inflammatory, hepatoprotective [18]
4	Bibhitak	antioxidant, laxative, antidiabetic, analgesic, anti-helminthic, anti-pyritic properties, antiulcer, antifungal, antibacterial and anti-hypertensive [19]
5	Musta	stomachic, anthelminthic, emmenagogue, astringent, anti-inflammatory, antioxidant, antipyretic, galactagogue, carminative, antidiabetic, cytoprotective, antimutagenic and analgesic [20]
6	Vidanga	hepatoprotective, antidiabetic, anthelminthic, diuretic, laxative antioxidant, anti-bacterial [21]
7	Shunthi	anti-inflammatory, antimicrobial action, anti-oxidative effect, bronchodilator, antimicrobial action [22]
8	Maricha <sup>]</sup>	antibacterial, anti-inflammatory, antifungal, hepatoprotective, antioxidant, anticancer, antimicrobial, antihypertensive, antiasthma, insecticidal, antithyroid, wound healing activities [23]
9	Pippali	antimicrobial, antiplatelet, antihyperlipidemic, analgesic, anticancer, antioxidant, antiamebic, hepatoprotective, anti-inflammatory, coronary vasodilation, bioavailability-enhancing, immunomodulatory, adulticidal, melanin-inhibiting, antidepressant, antifertility, antiobesity, larvicidal, radioprotective, cardioprotective, antifungal <sup>[24]</sup>
10	Loha Bhasma	anti-anemia, aphrodisiac, emmenagogue, stimulant, anti-bacterial, anti-inflammatory, antioxidant, astringent, hematogenic, anti-ageing, analgesic, antipyretic [25]

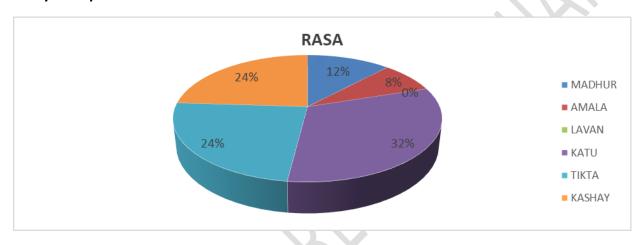
Table 4 Ingredients of Navayas Churna with their therapeutic actions

# 91 Analysis as per *Guna*



- Table 2 indicates that *Ruksha Guna* dominates the composition with 36%, followed by *Laghu*
- 94 Guna at 32% and Tikshana Guna at 20%. The remaining Gunas Guru, Snigdha and Shita each
- 95 constitute 4% of the composition.
- 96 Ruksha is Kaphanashak, Shoshana, Laghu is Laghavakaraka, Vranaropaka, Utsahavardhaka and
- 97 Sphurtikar. Tikshana is Shodhana, Lekhan Gunatamaka. Guru is Brihana, Truptikar. Snigdha is
- 98 Kledana, Balya, Varnya and Snehamardavakar. Shita is Stambhana, Murcha, Dah, Trushna and
- 99 Swedanashaka.<sup>[26]</sup>

## Analysis as per Rasa



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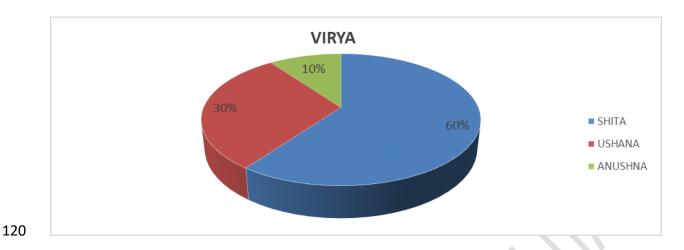
- 102 In Navayas Churna, the major Rasa is Katu, forming 32% of the composition.
- 103 Tikta and Kashaya each account for 24%, while
- 104 Madhur is 12% and Amla is 8%.
- 105 Lavana Rasa is entirely not present in its composition

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- 107 According to Acharya Charak, katu rasa has stotas shodhana, Kandunashana and Vrana 108 Avasadaka properties.
- 109 Kashaya Rasa is characterized by Sandhankar, Snashamaka and Sangrahi Gunas, along with110 actions like Sleshma, Pitta, and Rakta Prashamaka.
- 111 Tikta Rasa shows Deepak, Pachaka, Lekhana, Mansaposhaka, Jwaraghana, Vishaghana,
- 112 Krumighana and Kandughana effects.
- 113 Madhura Rasa is Saptadhatuposhaka, Indriya Prasadak, Balavarnakar, Ayushya Vardhaka, and
- acts as Pitta, Visha, Trushna and Daha Prashamanaka, it is Balya, Jivaniya and Tarpaniya.
- Together, these attributes aid in *Samprapti Vighatan* as indicated in the *Phalshruti* of *Navayas* Churna. [27]

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Analysis as per Virya



According to Table 2, the analysis of *Virya* shows *Shita Virya* constitutes 60%, *Ushna Virya* 30%, and *Anushana Shita Virya* 10% in the composition.

Ushna Virya exhibits Vatakaphashaman, Pittajanana, Dahan, Pachan, Swedana, Vilayana and Laghu properties.

125 Shita Virya provides Prasadan, Sthrikaran Vishyandan Jivaniya and Balya properties.

# Analysis as per Vipak

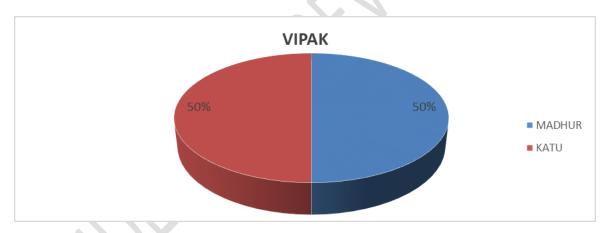
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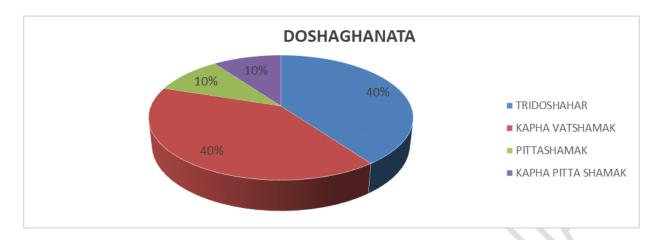
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129 As per Table 2, based on the *Vipak* analysis, *Madhur* and *Katu* each account for 50% of the composition.

# Analysis as per Doshaghanata



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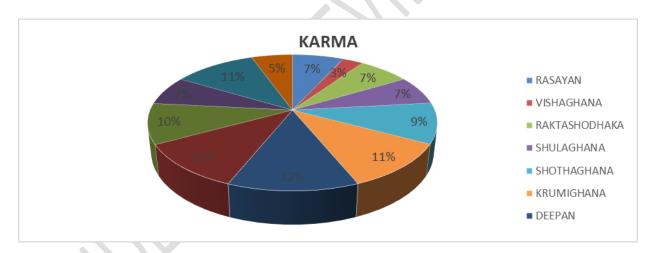
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Table 3 indicates that Navayas Churna consists of 40% Kapha Vatshamak,

40% Tridoshahar and

10% each of Pittashamak and Kaphapitta Shamak properties.

# Analysis as per Karma



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The analysis reveals that *Deepan* constitutes 12.32%, while

Krumighana, Pachan and Jwaraghana account for 10.95%.

Shotaghana and Kushtaghana comprise 9.58%.

Rasayan, Raktashodhana, Hrudya and Shulaghana Karma collectively make up 6.84%,

142 Arshoghana Karma is 5.48% and

Vishaghana Karma contributes 2.73%.

# **DISCUSSION**

145 146 147 148 149 150	In today's world, however, there is a growing interest in Ayurveda for its timeless principles, highlighting the importance of demonstrating their relevance in the modern age. It is crucial to revisit the traditional remedies to encounter the various challenges. <i>Navayas Churna</i> being one such remedy that needs exploration, and this is why it has been selected for review. <i>Navayas Churna</i> is composed of nine herbal ingredients and one mineral component, as previously mentioned.
151 152 153	According to Ayurvedic literature, the therapeutic indications (Rogadhikar) for Navayas Churna include Pandu, Hridroga, Bhagandara, Shotha, Kustha, Udara, Arsha, Mandagni, Aruchi and Krimi Roga.
154 155 156	Here, now will discuss how the ingredients of <i>Navayas Churna</i> help in the <i>Samprapti Vighatana</i> (breaking the process of disease formation) of the above diseases through their properties
157	Pandu
158 159 160 161 162 163 164 165 166	Navayasa Churna is an effective Ayurvedic formulation for managing Pandu (anemia), primarily by increasing serum ferritin and hemoglobin levels. Amalaki is a rich source of iron and vitamin C, which enhances iron absorption. Haritaki is rich in minerals and vitamin C and acts as a potent Rasayana that nourishes all Dhatus. [28] Musta has manganese and copper present, which help the metabolism of iron and synthesis of Hemoglobin. [29] Lauha Bhasma supports the regeneration of hemoglobin. Trikatu enhances the bioavailability of nutrients [31] while Vidanga combats parasitic infections, a common cause of anemia, and supports digestion, liver function and blood health through its deepana, anulomana, hridya and shonitasthapana actions. Together, these ingredients work to correct all types of anemia and promote overall vitality.
168	Hridaroga
169 170 171 172 173 174 175	The chief ingredient in <i>Navayasa Churna</i> is <i>Loha Bhasma</i> , which primarily acts on the <i>Rakta Dhatu</i> by increasing hemoglobin levels. This nourishes the heart through oxygenation. Many ingredients in this formulation also possess <i>Rasayana</i> properties, which help rejuvenate and strengthen cardiac function. As the blood becomes purified, the efficiency of the heart improves, helping to prevent further complications. Additionally, the ingredients exhibit antioxidant properties that reduce oxidative stress on cardiac tissues, protecting the heart from degenerative changes.
176	Aruchi and Mandagni
177 178 179 180 181	Since <i>Ama</i> (toxins) is widely recognized as the root cause of most diseases, initiating treatment with <i>Deepan</i> and <i>Pachan</i> therapies is essential for effective disease management. According to the analysis of <i>Karma</i> , nearly all the ingredients in the formulation possess <i>Deepan</i> and <i>Pachan</i> properties, which help eliminate <i>Ama</i> from the body. Additionally, <i>Triphala</i> acts as a mild laxative, alleviating constipation and subsequently relieving symptoms associated with <i>Strotas</i>

- 182 Avarodha. Katu is the predominant Rasa in this preparation, which also plays a vital role in
- 183 correcting Strotas Shodhan means clearance of minute channels in the body. Furthermore,
- 184 Trikatu and Trushna stimulate the liver, promoting bile secretion, which is essential for the
- digestion and absorption of fats. The combined properties help eliminate *Ama* and strengthen
- 186 Agni, enabling effective disease management. The key ingredients of this formulation
- synergistically support *Agni*, facilitating *Samprapti Vighatan* for overall disease.

## Arsha and Bhagandar

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- As we discussed, Ama is root cause of most diseases. In the case of Arsha and Bhagandara, the
- accumulation of *Ama* in the gastrointestinal tract plays a crucial role in disease manifestation.
- 191 Hence, the main line of treatment is *Deepana* and *Pachana*. *Navayasa Churna* promotes *Agni*-
- dipana and enhances digestive efficiency. This not only improves overall digestion but also
- 193 prevents the formation of hard stools, which is a major aggravating factor in Arsha. Navayas
- 194 Churna reduces constipation. Also acts as Tri Doshahara. In Arsha, vitiated Pitta Dosha leads to
- 195 Rakta-strva and shotha, vitiated Kapha Dosha contributes to Picchila strva and Vitiated Vata
- causes Shula. The *Tridoshahara* effect of this formulation helps to balance all three *Doshas*,
- thereby alleviating the primary symptoms associated with *Arsha* and *Bhagandara*. The contents
- of Navayasa Churna are Vraṇaropaka and Rasayana, which help to heal fissures. In the
- 199 condition of *Bhagandara*, where *Puya* formation is common, *Navayasa Loha* helps eliminate
- 200 Ama, purify the Rakta Dhātu and maintain its healthy state. Many of the constituents also
- 201 exhibit Shothaghna and Vyadhikshamatva-vardhaka actions, which further assist in reducing
- inflammation and enhancing the body's natural defense mechanisms to combat the symptoms
- of Arsha and Bhagandara.
- 204 Navayasa Churna, through its Dipana, Pachana, Tridoshahara, Ama-nashaka, Vrnaropaka,
- 205 Rasayana and Rakta-prasadaka properties, provides comprehensive management in Arsha and
- 206 Bhagandara, addressing both the root cause and symptomatic relief.

## 207 **Udar**

- 208 In *Udara Vyadhi*, vitiated *Kapha* and *Pitta Doshas* lead to fluid accumulation and inflammation.
- 209 Navayasa Churna, with its Tikta and Katu Rasa, pacifies these Doshas and helps reduce
- inflammation. In Jalodara, Ama is a key factor. Amanash occurs due to the Deepana, Pachana
- action of *Navayasa Churna*. *Lekhana*, *Ruksha*, and *Laghu* properties help eliminate excess
- 212 Kapha Medas, toxins, and abdominal fluid and prevent recurrence.

## Shotha

- The formulation also exhibits *Shothaghna*, hepatoprotective, antimicrobial, antioxidant, and
- antibacterial effects. These support liver function, reduce swelling, and fight infections. By
- 216 enhancing *Dhatu-agni* and immunity, it promotes tissue repair and prevents chronic
- 217 inflammation.

21	.8	Ku	sht	ha

- 219 In the pathogenesis of Kushta Vyadhi, Ayurveda highlights seven key factors that become
- vitiated: Rakta, Lasika, Mamsa, Twacha and the Tridosha. Among these, Rakta Dhatu and
- 221 Tridosha play a central role in disease manifestation. Navayasa Churna effectively manages
- 222 Rakta Dushti and balances all three Dosas due to its well-formulated composition. By purifying
- 223 Rakta Dhatu and correcting imbalances of Dosha, it helps relieve core symptoms of Kushta,
- such as Kandu, Vaivarnya, Lalima, Strava and Jadatva.
- The dominance of *Katu* and *Tikta Rasa* in this formulation enhances its *Shodhana* and *Ropana*
- 226 effects. These Rasas cleanse the *Twacha*, eliminate *Dosha* and *Ama*, and promote healthy skin
- regeneration. Navayasa Churna helps to heal Kushta Vyadhi through systemic and local effects,
- 228 hence recurrence is prevented and long-term relief is gained.

## 229 Krumi

- 230 Abnormal digestion and impaired metabolism create a conducive environment for the
- development and proliferation of *Krumi*. In this context, the formulation known as *Navayasa*
- 232 Churna contains a predominance of Katu and Tikta Rasa, both of which are traditionally
- 233 recognized for their Krumighna properties. The eradication of Krumi from the body through
- these herbs leads to significant improvement in appetite. As digestion improves, the nutritional
- absorption in the gut is enhanced, resulting in better nourishment of bodily tissues and overall
- 236 strengthening of the body. Through a synergistic combination of *Deepana*, *Pachana*,
- 237 Krumighna and blood-purifying actions, Navayasa Churna targets eliminating Krumi and also
- restores digestive balance and promotes systemic health.

#### 239 **CONCLUSION**

- 240 The formulation of *Navayas Churna* includes *dravyas* endowed with various properties which
- can break down the manifestation process of the Rogas mentioned in the Phalashruti, such as
- 242 Pandu, Hridroga, Bhagandara, Shotha, Kustha, Udara, Arsha, Mandagni, Aruchi and Krimi Roga.
- 243 The wise selection of dravyas, based on Acharya Yukti, proves to be highly relevant in the
- current era. The drugs used in the combination help to manage the multiple diseases. The
- 245 herbo-mineral components in such formulations are biocompatible and possess particles small
- 246 enough to enter the bloodstream efficiently. This enhances their therapeutic potential.
- 247 The formulation, after entering the bloodstream, exhibits various actions on the target cells and
- 248 achieves the results as explained above.
- 249 The combined study of traditional medicines with modern technology signifies a transformative
- era in healthcare, where traditional Ayurvedic wisdom converges with modern scientific
- 251 understanding, offering effective and natural solutions to contemporary health challenges.

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