

A PHARMACEUTICO-ANALYTICAL EVALUATION OF DWIBHUJA RASA

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ABSTRACT

In contemporary times, *Rasaushadhis* are increasingly becoming the drug of choice for effectively managing chronic ailments, reflecting their importance and potential in modern healthcare. *Rasa* preparations are tasteless, adequate in small doses, fast-acting, and have a long shelf life, making them easy to handle and highly valuable in therapeutic applications. Here is a pharmaceutical-analytical evaluation of *Dwibhuja Rasa*, explained in *Rasayogasagara* which indicates *Navajwara*. To date, no scientific studies have been carried out on this formulation. *Suddha Hingula* and *Jayapala* are given *Mardana* in *Jambeera Swarasa* for time duration and made into pills. The final formulation was bright red and in fine powder form, which was later rolled into pills using *Nimbu Swarasa*. The pills had a spicy taste, croton-like smell, and smooth texture, producing no sound when touched. Physico-chemical parameters, along with instrumental analysis results, supported its potential antipyretic activity.

Keywords: *Dwibhuja Rasa*, *Hingula*, *Jayapala*, *Jwara*, Analysis.

INTRODUCTION

Jwara appears as an independent disease and a *Lakshana* of various diseases. Because of this, it is a common health problem within medical practice. Abnormal food habits, lifestyle, etc., disturb

Jatharagni's health, which leads to *Jwara* and *Vedana*. Also, nowadays, a wide range of fevers have been discovered, and we are afraid of emerging ones. *Dwibhuja Rasa* is a highly potent Ayurvedic

formulation classified as a herbomineral combination, with *Hingula* and *Jayapala* as its main ingredients. It is recommended for treating *Navajwara*, as described in the *Rasayoga Sagara*¹. Being a *Rasaushadhi*, it is more potent than other *Jwarahara* (fever-reducing) *Kashtoushadhis*, and it is quickly assimilated by the body, even in tiny doses. Due to the pharmacological properties of its ingredients, *Dwibhuja Rasa* can effectively address *Jwara* (fever) from its early stages. Here is the efficacy of *Dwibhuja rasa* tested analytically to know the quality of the formulation prepared.

Materials and Methods

Raw drugs were collected from Herbocare, Perambra, and U G Traders, Kozhikode, Kerala. The authenticity was confirmed based on the *Grahya lakshanas*² mentioned in the *Ayurveda* classics, which experts in Rasasasthra and Dravyaguna authenticated.

Organoleptic parameters: This part of the study was conducted at *Rasashala* and attached to the Department of RSBK, MVR Ayurveda Medical College, Parassinikadavu, Kannur, Kerala. Physico-chemical parameters: This study was conducted at the

Quality Control Laboratory, MVR Ayurveda Medical College, Parassinikadavu, Kannur, Kerala.

Instrumental Analysis: The crystallographic study used the X-ray diffraction method, and the SEM-EDAX of *Dwibhuja rasa* was studied at the Manipal Institute of Technology in Manipal, Karnataka. *Dwibhuja* means two arms. This formulation has two main ingredients, like our hands: the *Hingula* and the *Jayapala*. Only one reference to *Dwibhuja Rasa* is found in *Rasayogasagaram*, a herbomineral formulation. It comes under the *Khalviya Rasayana kalpana* in *Rasashastra* and contains one-part *Hingula* and two parts *Jayapala*. *Suddha Hingula* and *Suddha Jayapala* were taken and given *mardana* in *nimbu swarasa* for a duration and rolled into pills of 1 *Ratti*.

Observation and Results

Bhavana of 50 gm of *Suddha Hingula* and 100 gm of *Suddha Jayapala* taken in a *khalva yantra*. After making a homogeneous mixture, *mardana* was carried out, frequently adding sufficient quantities of *Nimbu swarasa* and making it into *Gutikas* after a duration of *mardana* of the mix.

RESULTS

1. Organoleptic properties

Table No: 3.1 Showing organoleptic features of *Dwibhuja Rasa*.

Sl.No.	Characteristics	Sample A	Sample B	Sample C
1.	Colour	Bright Red	Bright Red	Bright Red
2.	<i>Rupa</i>	Fine powder	Fine powder	Fine powder
3.	<i>Rasa</i>	Pungent	Pungent	Pungent
4.	<i>Gandha</i>	Croton like	Croton like	Croton like
5.	<i>Sparsha</i>	Very fine	Very fine	Very fine
6.	<i>Sabda</i>	Not applicable	Not applicable	Not applicable

2. Physicochemical properties

Table 3.2 Results of standardisation parameters

Parameters	Result n = 3 (% w/w)
	<i>Dwibhuja rasa</i>
pH	4.25
Loss on drying	2.7178
Total Ash	2.1459
Acid Insoluble Ash	1.9593
Water soluble ash	0.3916

3. XRD

The samples were power diffraction using a coupled two theta/theta scan type in continuous scan mode from a two-theta angle of 3.000 degrees to 112.000 degrees, sample rotation of 15.0001 per minute, a copper anode, a wavelength for display at 1.54060 A using a Lynx eye detector, and crystallinity from 3.000 to 80.002.

XRD Graph pattern

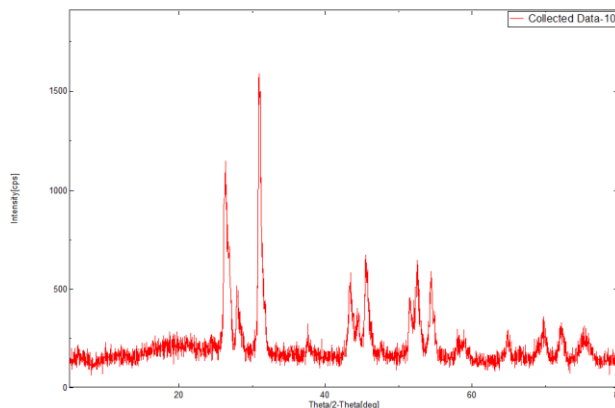


Table 3.3 shows elements present in Dwibhuja rasa & concentration.

Element	Concentration level
Oxygen & Carbon	Major
Mercury	Minor
Sulphur	Minor

4. SEM-EDAX

Spectrum processing :

Peak possibly omitted: 3.210 keV

Processing option: All elements analysed (Normalised)

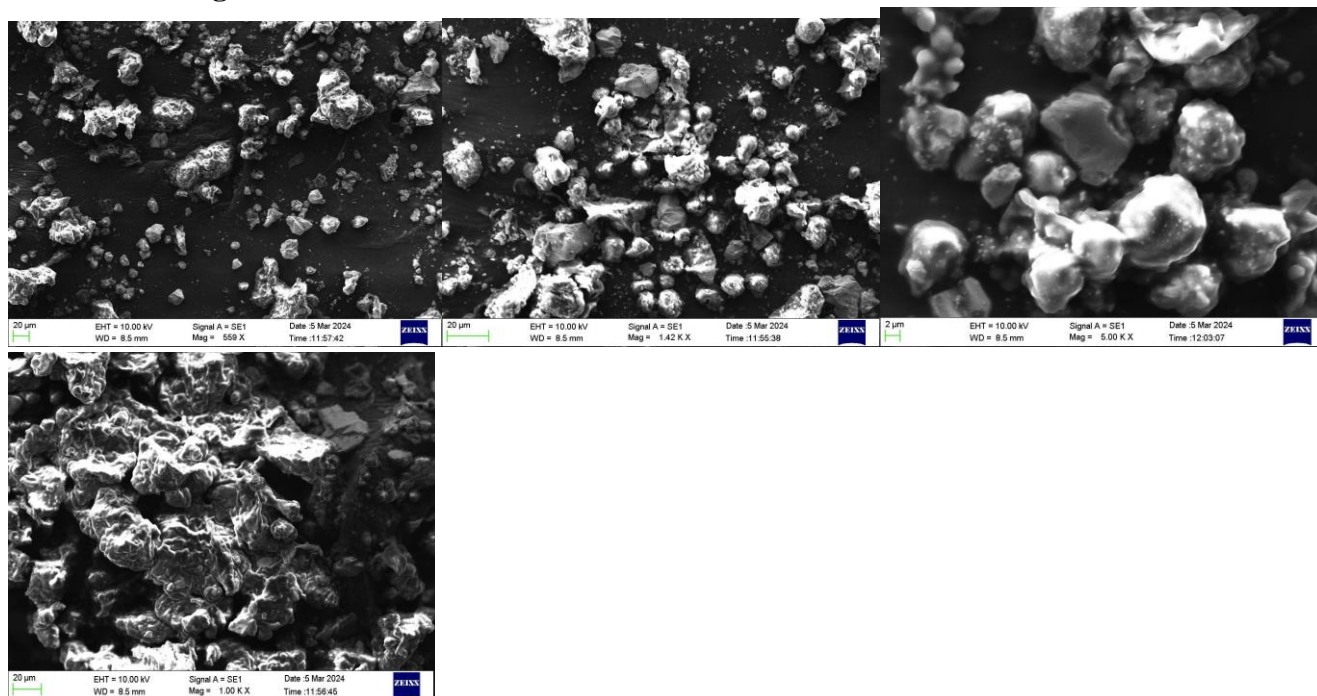
Number of iterations = 4

Element	Peak possibly omitted : 3.210 keV
C	+
O	+
S	+
Hg	+

SEM

Particle Size	Magnification
20µm	559X
20µm	1 KX
100µm	300X
20µm	1.42KX
2µm	5 KX
100µm	100X

Picture showing results of SEM



DISCUSSION

Dwbihuja Rasa is a formulation mentioned in *Rasayogasagam*. It is a formulation which still needs to be explored. The formulation is unique due to its minimum number of ingredients (i.e. two) and also due to its indications and properties. Both drugs were purchased from different places in South India, and the ideal samples suitable for the study were selected based on the presence of *Grahya lakshanas* mentioned in the classics. This ensured the genuity of the drugs. *Hingula* had a bright red color, similar to the vivid red hue of the *Japakusuma* flower *lakshanas* as per the classics. *Jayapala* was brown pea nut-like seeds. *Hingula Sodhana*, according to *Rasatarangini* reference³, 248.5gm of *Asuddha Hingula* taken and done *bhavana* with *Ardraka swarasa* for 22 hrs. The total *Ardraka swarasa* used for the *Bhavana* process was 190ml. *Suddha Hingula* has a bright red colour with a weight gain of 6gm obtained. *Jayapala sodhana* was the Third practical done. There are varieties of methods of purification of *Jayapala* mentioned in *Rasasasthra* classics. The *Dolayanthra* method is used here to purify *Jayapala*, as in *Rasatarangini*'s first reference⁴. Here, *Godugdha* is used as a medium for

Dolayanthra Swedana. *Swedana* is done for 3 hours or one *yama* and repeated three times. 1kg *Jayapala* was soaked one day before to remove the outer covering easily. The next day, the outer covering and radicle inside were removed for the soaked *Jayapala* seeds. After removing the outer covering and the radicle, we got only 400 gms of *Asuddha Jayapala*. As per studies, *Jayapala* seed kernel contains 55-57% croton oil; the main toxin content helps further purification processes.

This 400gms of *Jayapala* was subjected to *Dolayanthra swedana* for 3hrs. After 3 hours of *swedana*, the *pottali* was taken out and untied. The seeds inside the *pottali* were washed in hot water thoroughly to avoid all *snehamsha* of milk and dried under sunlight till they dried. Just after washing, the seeds weighed 501.5gm, and on drying in sunlight, it reduced to 402 gm. Next, *swedana* is done with the 400gms of *Jayapala* in 1600ml of *Godugdha*. The third *swedana* was done with 402.8gm of *Jayapala* with 1800 ml of *Godugdha* and a total of 7.5L of *Godugdha* used for the whole procedure, which was 17 hours long. Finally, 323.5 gms of *suddha Jayapala* was obtained, a 67.65% loss.

As *Hingula* is purified by *bhavana* in *Ardraka swarasa*, it is evident that the properties of *Ardraka* get incorporated into *Hingula*. So the *Jwaraghna* property of *Hingula* is potentiated. In the case of *Jayapala*, the non-essential oils of *Jayapala* get into the milk, as is evident from the milk after *sodhana*, which has a lower pH than milk before *sodhana*.

The third practical was the preparation of the medicine, *Dwibhuja rasa*. The obtained *Suddha Hingula* and *Suddha Jayapala* were mixed and done *mardana* with *Nimbu swarasa* for a duration not mentioned in the reference. The final stage of preparation of *Dwibhuja Rasa* is to make *mardana* for 24 hours with 105 ml of *Nimbu swarasa* and 774 *Gutikas*. Compared to the raw drug, sunlight increased the oil percentage after *sodhana* because of the loss of moisture content, resulting in the oil concentration.

Nimbu Swarasa is used for *mardana* and is an excellent appetiser because of its *Tikshna guna*, *Amla rasa*, and *Amla vipaka*. The leading cause of all the diseases is *Mandagni*. Acharya Vagbhata mentions “*Sarve Rogoapi Mandaagnau*”. *Dwibhuja Rasa* is a formulation containing *Shuddha Hingula*, *Shudha Jayapala*, and *Jambeera Swarasa*. The *Shuddha Hingula* and *Shudha Jayapala* are the drugs of choice for the *Jwara*, and as these are the *Rasoushadhi* and *Upavisha Dravya*, their potency and the fastest actions against *Jwara* are appreciable. Organoleptic analysis showed all the samples were fine powders with a bright red colour, with a characteristic odour and no taste, and delicate to the touch. The physicochemical analysis assessed both classical and modern parameters. *Varna* of all samples were found to be red. Other parameters like pH, Total Ash, Acid insoluble Ash, Water soluble ash and LOD were also determined to assess the quality of the three samples. All three samples showed pH of 4.25, 4.38 & 3.59; LOD values of 38.44 ± 0.01 ; Total ash of 5.88 ± 0.14 ; Acid insoluble ash value 2.62 ± 0.00 and Water-soluble ash value of 2.93 ± 0.00 . pH shows that *Dwibhuja rasa* is acidic. The instrumental analysis of *Dwibhuja Rasa* reveals critical structural and chemical properties that directly influence its bioavailability, efficacy, and safety. The formulation exhibits micro-sized particles with

uniform distribution, as determined by particle size analysis. The increased surface area significantly enhances absorption and bioavailability, contributing to its therapeutic potential. XRD analysis confirmed the presence of crystalline cinnabar (HgS), which is chemically stable. This crystalline form plays a pivotal role in ensuring the safety and therapeutic efficacy of the formulation, as it minimises the risk of mercury toxicity. Elemental analysis demonstrated safe levels of mercury (Hg), arsenic (As), and other metals after *Sodhana* (purification). The stable crystalline form, coupled with the fine particle size, ensures enhanced solubility and chemical stability, making the formulation effective and safe for use. The elements present in *Dwibhuja Rasa* are C, O, S, and Hg. Future studies should focus on pharmacokinetic profiling and large-scale clinical trials to further substantiate these findings and standardise the formulation for broader therapeutic applications.

Probable mode of action

Hingula has *Jwarahara* action, and *Jwaraghna Ardraka Rasa* and *Jayapala* potentiate *Tikta rasa*. Effective in *Jwara* conditions, it works like a weapon towards *Jwara*. As the final *mardana* is done with *Nimbu swarasa*, which has acidic properties, it helps develop immunity. Lemon juice is rich in vitamin C, which helps boost the immune system. A more robust immune system can effectively combat infection or illness causing the fever. *Dwibhuja Rasa* alleviates the aggravated *Doshas* and stimulates the *Agni* (power of digestion). As a result, *Jwara* subsides, the body becomes light, and appetite increases.

CONCLUSION

Dwibhuja Rasa's pharmaceutical processing is straightforward and highly economical. It uses only two ingredients and is prepared relatively quickly. Analytical results strongly support its traditional indications, affirming its therapeutic potential and practical applicability.

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