

**AN EXPERIMENTAL EVALUATION OF ANTITUSSIVE ACTIVITY OF SHODHITA
MANAHSHILA W.S.R TO KASA ROGA****Dr. Chaithra P. B.*¹, Dr. Rachana C.²**¹3rd PG Scholar, Department of P.G Studies in Rasashastra and Bhaishajya Kalpana, Karnataka Ayurveda Medical College and Hospital, Mangalore.²HOD and Professor, Department of P.G Studies in Rasashastra and Bhaishajya Kalpana, Karnataka Ayurveda Medical College and Hospital, Mangalore.***Corresponding Author: Dr. Chaithra P. B.**3rd PG Scholar, Department of P.G Studies in Rasashastra and Bhaishajya Kalpana, Karnataka Ayurveda Medical College and Hospital, Mangalore. DOI: <https://doi.org/10.5281/zenodo.23035431>**How to cite this Article:** Dr. Chaithra P. B.*¹, Dr. Rachana C.². (2026). An Experimental Evaluation of Antitussive Activity Of Shodhita Manahshila W.S.R To Kasa Roga. World Journal of Pharmaceutical and Medical Research, 12(10), 246-251. This work is licensed under Creative Commons Attribution 4.0 International license.

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ABSTRACT

Manahshila is one among the *Uparasa*'s. It is also one among the arsenic compounds mentioned in the Ayurvedic texts. For the therapeutic usage of *Manahshila*, it should undergo proper *Shodhana* procedure to make it free from the physical and chemical impurities. There are different medias for the purification process. *Ardraka Swarasa Bhavana* is mentioned for the *Shodhana* of *Manahshila* which is used in this study. *Shodhita manahshila* is indicated in the management of *kasa*, *shwasa* etc. Experimental study on the antitussive activity of *shodhita manashila* was conducted after inducing cough by exposing the wistar albino rats to the aerosol of 7.5% citric acid in water. The results were analysed for statistical significance on the basis of ANOVA test. The results suggest that the test drug has effective antitussive activity with a favourable safety profile. Since this medicine is given in minimal dose and has no taste, making it more palatable to the patients. Hence the study "An experimental evaluation of antitussive activity of *shodhita manahshila* w.s.r to *kasa roga*" has been undertaken.

KEYWORDS: *Shodhita Manashila*, Antitussive activity, *Kasa*.**INTRODUCTION**

Rasashastra is the important branch of Ayurvedic pharmacology. This branch deals with the use of metals, minerals, gemstones, certain poisonous herbs and their processing. *Rasa Dravyas* are classified into *Rasa*, *Maharasa*, *Uparasa*, and *Sadharana* rasa etc. *Manahshila* is one among the *Uparasa*'s. It is also one among the arsenic compounds mentioned in the Ayurvedic texts. *Manahshila* is called as red arsenic with two molecules of arsenic and two molecules of sulphur. The word *manahshila* means pleasant to mind, looks like a stone, has its own smell and attracts everyone, according to Shabdha Kalpa Druma.^[1]

Arsenical compounds have a long standing and a significant history in both pharmacology and traditional ayurvedic practices. They are deliberately incorporated into the Ayurvedic formulations either as a primary active ingredient or as an auxiliary agent to enhance the therapeutic efficacy of the herbal drugs.^[2]

Manahshila is used for both internal and external applications. Before being administered as a medicine, *Manahshila* should undergo specific detoxification procedure known as *shodhana* samskaras. If consumed without proper *shodhana*, it causes *mandagni*, *malabaddhata*, *ashmari* and *mutrakrichra*.^[3] *Shodhana* is the process of removal of physical, chemical impurities and potentiating the drug, thereby rendering it apt for the therapeutic administration. So, to ensure safety and efficacy in its medicinal use, the process of *shodhana* is strongly advised before its internal administration.

Kasa is one of the most common complaints which may disturb the day-to-day life. According to Charaka Samhita, *Kasa* is manifested due to the vitiation of *Prana Vayu*, *Apana Vayu* and *Udana Vayu*. The aggravated *Kapha* causes obstruction for the movement of *Vata* in the *Urasthana* leading to the aggravation of *Prana Vayu*, *Apana Vayu* and *Udana Vayu*. As a result, *Vata* moves upwards, affects the channels of circulation in the upper

part of the body and gets lodged in the throat and chest⁴. *Kasa* can be compared to cough in modern science.

Cough is considered to be a symptom of different disease entities in modern system of medicine. Cough occurs due to the irritation of respiratory mucosa. Recurrent attacks of cough may affect one's daily activities. Antitussives are the drugs that act in the CNS to raise the threshold of cough center or act peripherally in the respiratory tract to reduce tussal impulses or both these actions.^[5] *Manahshila* having *Katu* and *Tikta rasa*, *Lekhana* and *kapha chedhaka* property acts as *Kasahara* and the *Rasayana karma* helps in nourishing the *rasadhi dhatus*.

Thus, considering this, the therapeutic efficacy of *shodhitha manahshila* in *kasa roga* after processing with *ardraka swarasa* had been attempted in this present study.

MATERIALS AND METHODS

A comprehensive review and a critical screening of the Ayurvedic literature alongside modern medical texts was undertaken to assess the proposed hypothesis. Supplementary information was systematically collected from the authoritative sources, including standard textbooks of contemporary medicine, reputable online platforms, peer-reviewed journals, and relevant research publications. Furthermore, genuine raw materials were carefully procured and rigorously examined to ensure the accuracy, authenticity, and reliability of the findings.

PREPARATION OF TRIAL DRUG

The *shodhitha manahshila* was prepared in the pharmacy attached to the institution, following the *bhavana* procedure as mentioned in *Rasaratna Samucchaya*.^[6] The *shodhana* of *manahshila* is done by subjecting it to *bhavana* with *ardraka swarasa* for 7 times. Total of 170ml of *ardraka swarasa* was absorbed in 200gms of

Manahshila during the process of *bhavana*, resulting in an increase in weight by 14gms of *manahshila*. Final weight of *Ardraka Shodhitha Manahshila* was 214gms.

EXPERIMENTAL STUDY

The animals were obtained from the animal house attached to the Pharmacology laboratory of SDM Centre for Research in Ayurveda and Allied sciences. The ethical clearance was taken before the experiment and the ethical clearance number for the selected study was SDMCRA/IAEC/SDM-KAMC-MR-13. Six rats in each group were taken and kept for acclimatization for some days.

ANIMALS

Wistar Albino rats of either sex weighing 200–250 g was selected and were used for the experimental study.

Table 1: Inclusion And Exclusion Criterias Of Wistar Albino Rats.

INCLUSION CRITERIA	Healthy Wistar Albino rats of either sex weighing 200–250 g is taken.
EXCLUSION CRITERIA	Unhealthy Wistar Albino rats weighing below 200gms.

GROUPING

The rats were grouped into 3 groups with 6 animals in each group.

Group I – Normal Control.

Rats in this group were given with distilled water in volume equal to the volume of drug administered in the test drug administration groups.

Group II – Standard Group

Rats were given with dextromethorphan hydrobromide syrup.

Group III – Test drug Group

Shodhitha Manahshila along with 10ml of distilled water.

TABLE 2: GROUPING OF THE WISTAR ALBINO RATS FOR THE STUDY

SL. NO.	GROUP NAME	MEDICINE	NUMBER OF RATS
1.	Control Group	Normal diet and water control	6
2.	Standard Group	Dextromethorphan hydrobromide	6
3.	Test Group	Ardraka Shodhitha Manahshila	6

DOSE SELECTION

Rat dose will be calculated from the human dose by following standard conversion method proposed by Barnes and Paget formula.

Rat dose = Human dose x Surface area factor 0.018 x 5; gives per kg body weight dose.

Dose for rats

- Dose of *shodhitha manahshila* = Human dose X 0.018 X 5.

i.e., 8mg X 0.018 X 5 = 0.72

= 0.72mg/kg body weight.

- Dose of standard drug - Dextromethorphan hydrobromide
= 3mg/kg body weight.

ROUTE OF DRUG ADMINISTRATION

The test drug was administered according to the body weight of the animals through the oral route with the help of feeding needle.

DRUG ADMINISTRATION

The control and Test group were administered with medicine throughout the course of experiment including the experiment day in the morning session orally.

DURATION

The above scheduled drugs were administered for 10 days.

PROCEDURE

Wistar Albino rats of either sex weighing 200–250g was used. The animal was placed in a cylindrical glass vessel, with 2 tubes at either end. One serves as the entrance of the aerosol, the other for its efflux. The latter tube has a side-arm connecting to a tambour, from which changes in pressure can be registered. A pinch-clamp with a variable screw was placed on the efflux tube beyond the side arm, permitting the regulation of the sensitivity of the system, so that the normal respiration is not registered, while the displacement of air in the enclosure caused by coughing of the animal was registered. The

Wistar Albino rats were exposed to the aerosol of 7.5% citric acid in water for 10 min to induce cough reflex.

The test drug and standard drug was given for 10 days. On the 10th day, each Wistar Albino rat of all the groups was subjected to the aerosol. The number of coughs during 10 min was recorded.

STATISTICAL ANALYSIS

The data generated during the study has been presented as MEAN $\pm$ SEM. The difference between different groups was determined by one way ANOVA test.

Table 3: Showing The Effect of Test Drug on Cough Response.

SL. NO.	GROUP		% CHANGE
1.	CONTROL GROUP	45 $\pm$ 12.04	-
2.	STANDARD GROUP	29.50 $\pm$ 4.264*	-34.444
3.	TEST GROUP	24.33 $\pm$ 2.305*	-45.933

Data: MEAN $\pm$ SEM, *P<0.05

RESULT

Data related to the antitussive activity of the test drug is shown in the table 3. The data shows there was decrease in tussive response in 10 minutes in standard group when compared to the control group, the observed decrease was found to be statistically significant.

The data shows there was decrease in tussive response in 10 minutes in test group when compared to the control group, the observed decrease was found to be statistically significant.

ASSESSMENT CRITERIA

Table 4: Showing The Number Of Cough Response In 10 Mins.

RATS	Control Group	Standard Group	Test Group
1.	25	39	35
2.	59	46	25
3.	41	24	24
4.	23	25	19
5.	98	20	21
6.	24	23	22

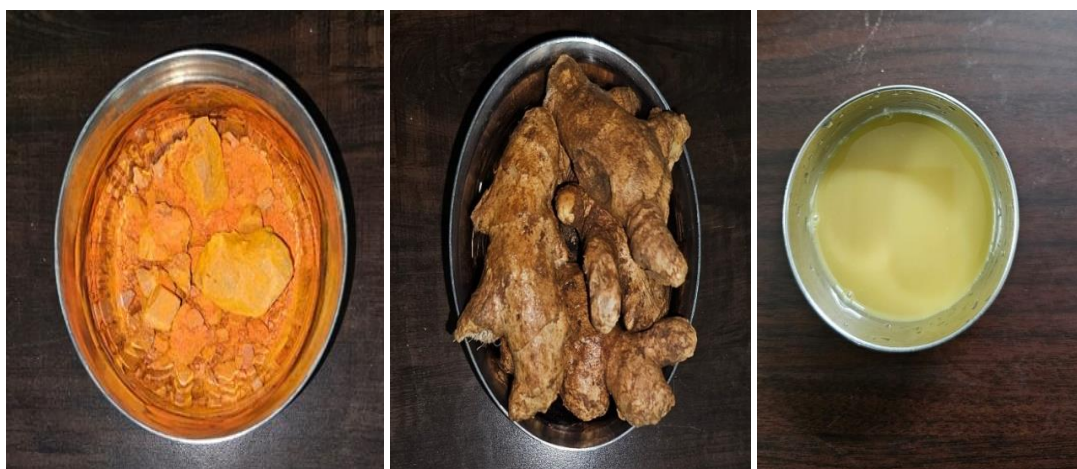


Figure 1: Ingredients for Manahshila Shodhana – Ashuddha Manahshila, Ardraka, Ardraka swarasa respectively.



Figure 2: *Bhavana* of *Manahshila* with *Ardraka swarasa*.



Figure 3: Process of *Bhavana* and the final product *Shodhita Manahshila*.



Figure 4: Experimental study.

DISCUSSION

Manahshila, which is classified under the *Uparasa* group in *Rasa Shastra* and is known by the synonyms like *Shila*, *Rogashila*, *kunati* etc., in the classical texts such as *Rasa Ratna Samuchchaya* and *Rasa Tarangini*.^[7] It occurs as the orange-red monoclinic crystals with the resinous luster, and therapeutically it possesses *Katu-Tikta Rasa*, *Ushna Veerya*, *Katu Vipaka* and *Kapha-Vata Shamaka* properties. *Manahshila* which is impure or which is not properly purified if administered leads to *Mutrashmari*, *Mutrakrichra*, *Mandagni* and *Malabaddhata* because of its *Ashuddha* form being *Teekshna*, *Guru*, *Vyavayi*, *Vikasi* and *Visha* in nature while the *Shuddha* form attains the *Laghutwa*, *Snigdha*, *Sookshma* and *Rasayana* qualities. Because of these properties, it acts as *Kasahara*.

Due to its inherent toxicity, *Ashuddha Manahshila* is strictly contraindicated for the internal use as it causes *Urahkshata*, *Raktapitta*, *Daha*, *Bhrama* and *Dhatu Kshaya*, and hence *Shodhana* is mandatory. *Shodhita Manahshila* is indicated in the *Shwasa*, *Kasa*, *Kshaya*, *Kushtha*, *Unmada*, *Jwara* and *Visha Vikara*.

For the *Shodhana* of *Manahshila*, the process of *Bhavana* is traditionally carried out using the various liquid media such as *Agastyapatra swarasa*, *Ardraka Swarasa*, *Bhringaraja Swarasa*, *Nimbu Swarasa*, and *Bijapura Swarasa* etc. In this study, *Ardraka Swarasa* was selected as the medium for *Bhavana* during the *Shodhana* of *Manahshila*.

There was an increase in the final weight of *Ardraka Shodhita Manahshila* when compared to the initial weight of *Ashodhita Manahshila* which is because of the addition of solid organic phyto-constituents from the *ardraka swarasa*. Thus, 170ml of *ardraka swarasa* was absorbed in 200gms of *Manahshila* during the process of *bhavana*, resulting in an increase in weight by 14gms of *manahshila*. Final weight of *Ardraka Shodhita Manahshila* was 214gms. Reddish colour of *Ashodhitha manahshila* was changed to dark brick red colour after 7 *bhavanas*.

In the detoxification of *Manahshila*, *Ardraka* plays a multifaceted role through the several biochemical mechanisms.

1) **Phytochelation:** Phytochelatin is the heavy metal binding peptides that play an important role in the detoxification of heavy metals by chelation.^[8] Ginger contains two important sulphur-containing amino acids such as cysteine and methionine, which act like phytochelatin to bind heavy metals and render arsenic non-toxic.

2) **Methylation:** Methylation is a process of detoxification of the arsenic in the body through the accelerated excretion. This process takes place in the liver by the addition of the methyl group to the arsenic which transforms it into a nontoxic form which is later

excreted. Cysteine, which is a methyl donor peptide in the ginger, aids in the process of methylation.

3) Ginger helps preserve glutathione, a natural antioxidant recycling enzyme and an important detoxifying agent present in the blood that binds arsenic for elimination through bile. Since arsenic poisoning depletes glutathione levels, ginger's protective effect prevents this decline and sustains detoxification capacity.^[9]

4) **Neutralization of alkalinity:** Ginger is acidic in nature with the pH of 3.6 neutralizes the alkalinity of *Manahshila* having the pH of 8.15. The alkalinity of *Manahshila* is reduced and there is enhanced safety because of its acid-base reaction. Previous experimental studies have confirmed that *Ardraka Shodhita Manahshila* is nontoxic in animal models, supporting the pharmacological relevance of these mechanisms in traditional *Shodhana* practices.^[10]

As *Manahshila* is having *vatahara* properties because of its *rasapanchakas*, it may be indicated in *Vataja kasa*. *Vataja Kasa* is characterized by the *Vata Prakopa* leading to the *Pranavaha Srotodushti*, *Rukshata*, and *Shushka Kasa* as per *Charaka Samhita*, *Chikitsa Sthana* 18/4-6. *Manahshila* is described as the *Kasa-Shwasa-Shula Nashaka* with *Ushna Virya*, *Katu Tikta Rasa*, *Teekshna Sookshma Guna* and *Vata Kapha Hara* properties in *Rasa Tarangini* 11/118 and *Bhavaprakasha Nighantu*. *Ushna virya* pacifies *sheeta guna* of *vata*, reduces throat dryness. *Katu rasa* removes *kapha avarana*, stimulates *agni*, *snigdha guna* which is obtained after *shodhana* counteracts *rooksha guna* of *vata* and lubricates the *pranavaha srotas* and *kantha*.

Shodhana with the *Ardraka Swarasa* is advocated to reduce *Teekshnata* and impart *Snigdha*, *Yogavahitva* to the drug. The *Ushna* and *Teekshna* properties likely cause *Srotoshodhana* and *Kapha Vilayana* and the *Snigdha* and *Dipana* effects counter the *Vataja Rukshata*. Gingerol present in the *Ardraka* may act as the TRPV1 modulator, adding antitussive and bronchodilatory activity, thus producing the synergistic *Kasa-Hara* action.

In modern science, *Kasa* can be correlated to cough, in which *vataja kasa* has symptoms similar to that of dry cough. Dry cough is usually treated with antitussives. Hence in this study, antitussive activity of *Ardraka Shodhita Manahshila* has been taken.

In the experimental study, citric acid is used to induce the cough reflex in the wistar albino rats. Citric acid aerosol induces cough by stimulating airway sensory receptors and vagal afferent pathways, producing a reproducible cough reflex that serves as a reliable experimental model for evaluating antitussive activity. The results of the cough response study clearly demonstrate the antitussive potential of the test drug. Compared to the control group, both the standard and the test groups showed a statistically significant reduction in

the tussive episodes within 10 minutes, with percentage decreases of -34.44% and -45.93%, respectively. The greater reduction observed in the test group suggests that the investigational formulation may be more effective than the standard reference in suppressing cough reflex. The statistical significance ($P < 0.05$) further validates the reliability of these findings, indicating that the observed effects are unlikely due to chance. These outcomes highlight the therapeutic relevance of the test drug and support its potential role as a safe and effective antitussive agent, warranting further exploration through the detailed pharmacological and clinical studies.

Overall, the results suggest that the test drug has effective antitussive activity with a favourable safety profile.

CONCLUSION

The study was conducted to evaluate the anti-tussive activity of Shoditha Manahshila with special reference to kasa roga. For this study, model used was citric acid induced antitussive model. The test drug was administered in vivo to animal for an experimental model of citric acid induced antitussive model for 10 days. And on the 10th day, the anti-tussive activity was measured by the number of cough response for 10 mins in each group.

Ardra Shodhita Manahshila demonstrated significant antitussive activity in the experimental antitussive activity model. There was a reduced tussive response in the test group when compared to control and standard groups. These findings scientifically support the classical Ayurvedic indication of the *Manahshila* as a *Kasahara* drug and indicates its potential role in alleviating the symptoms of *Kasa*. Based on the findings of the present study, *Ardra Shodhita Manahshila* possesses significant antitussive activity in wistar albino rats.

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