



(REVIEW ARTICLE)



Pharmaceutical study of Vasa (*Adhatoda vasica* Linn.) with special reference to its different dosage forms

Aditi R. Shinde *, Bharat J. Rathi and Manasi D. Chunchuwar

Department of Rasa Shastra and Bhaishajya Kalpana. Mahatma Gandhi Ayurved College, Hospital and Research Center Salod (H), Wardha, Maharashtra, India.

GSC Biological and Pharmaceutical Sciences, 2023, 23(03), 009–018

Publication history: Received on 09 April 2023; revised on 20 May 2023; accepted on 23 May 2023

Article DOI: <https://doi.org/10.30574/gscbps.2023.23.3.0197>

Abstract

Introduction: *Adhatoda vasica* Linn., a significant quinazoline alkaloid found in the neighboring plant linn, is the source of the drug bromhexine. The Sanskrit phrase "*namoolam anaushadham*" comes to mind. However, it describes pharmacological activity rather differently from other modern disciplines. Sometimes the Ayurvedic indication for a plant corresponds to the current medical indication for that plant's metabolite or derivatives of metabolites. But frequently, it indicates something that cannot be explained by an active principle. Investigating a medicinal plant's many applications can serve as a foundation for a deeper knowledge of that plant.

Aim: This review is a sincere attempt to cover the many aspects of Vasa. The outcome of this study is intended to add a new stage to the process of creating preparations that contain vasa.

Material and Method: For the current review, Bhaishajya kalpana texts, E-books, research journals, and dissertations were searched, and the data was collected and merged. Vasa is used as a primary medication as well as a major component in a variety of formulations.

Result and Discussion: On search vasa is formulations are found in various dosage forms either as primary medication or compound preparation like *swarasa, kalka, kwath, ghrita, taila, asava – arishta, granules, modak, guggulu, khanda* are included in present review. All dosage forms all useful in various disease conditions according to *vaya, kala, prakriti* etc. It is a substance that has attracted notice due to its usage in many kalpanas, and virtually every kalpana of this medication is present in classics of ancient literature that draws attention to its utility in various kalpanas.

Keyword: Vasa; Dosage form; Vasavaleha; Panchavidha kashay kalpana; Modified dosage form; Vasa ghrita

1. Introduction

In Ayurveda, the *bhaishajya* is given the highest priority since, in order to properly cure a condition, a physician must have high-quality medicines and a thorough understanding of *bheshaja*. *Bhaishajya kalpana* covers all aspects of medicines, including their fundamental principles.

Acharaya Charak explain about *Bheshaja* in *chikitsa chatuspad* (four limbs of treatment) where he explained the properties attained by the *samyak prayog* of *aushadh*. It should be – *Bahuta* (Available in large quantity), *Yogytvam* (More effective), *Aanekvidha kalpana* (Various pharmaceutical forms or multiple uses, *Sampat* (Richness in efficacy or potency) [1].

* Corresponding author: Aditi R. Shinde

According to *Acharya Charaka*, the perfect medication should be accessible all year long, which is *Bahuta*, and it should be able to change into various dose forms, which is *Anekavidha Kalpana*, [2] without changing its pharmacological effects. It is not practical, nevertheless, as it is frequently observed that the plants are not always present while their active components are at their optimum, necessitating the collection of them at a specified season [3]. So that these plants may be transformed into a formulation without losing their effectiveness and made available to us all year long in their original potency, this is also crucial.

The modified versions of *Panchavidha Kashaya Kalpana*, including Extract (*Ghana*), [4] *Avaleha*, [5] *Sneha*, [6] *Sandhana*, [7] *Varti* and help the drug material have a long shelf-life help with a good taste, an elegant appearance, a pleasant smell, and produce quick action with low doses [8]. Despite this, *Sneha*, *Sandhan*, and *Avaleha Kalpana* each possess unique qualities. For example, *Sneha* balances *Vata Dosha* and has the ability to reach every *Srota* in order to simulate *Dhatu*, while *Sandhana* produces quick action, palatability, has the ability to reach every *Srota* in order to remove obstruction, and has the capacity to reach every *Srota*. This distinguishes their usefulness in treating various diseases or stages of disease.

Asava - arishta is a favourite among the *Sandhana* formulations, but *Ghrita Kalpana* is typically utilised for oral usage. As a result, it is necessary to describe how to employ this *Kalpana* in a sick state. Due to its dose form, which aids in simple administration, palatability, and long shelf-life, *Avaleha* is one of the most well-liked *Kalpanas*. With the exception of illnesses like *Kasa*, *Shwasa*, *Shotha*, and so forth, it has been extensively employed as a rejuvenator (*Rasayana*) by *Acharya Charaka*, *Sushruta*, and *Vagbhatta*. *Avaleha* is employed often [9]. Despite the fact that *Ghana* is a synonym for *Avaleha*, most of the time it lacks sugar, honey, and ghee. In contrast to *Avaleha*, *Sneha*, and *Sandhana*, this was not frequently used throughout the *Samhita* era. Since *Acharya Charaka* claims that not every *Kalpana* is effective for every patient suffering from the same sickness, it is imperative to clarify how these *Kalpanas* should be used in the diseased situation. *Vasa* is a medication that receives attention due to its usage in various *Kalpanas*, and practically every *Kalpana* of this medication can be found in a classic recapitulation of ancient literature that attracts interest due to its utility in various formulations. The same is condensed into *Bhisakamata* [10] which serves as a synonym for *Vasa*.

Vasa (Adhatoda vasica) is widely available medication that is available throughout the year. The ease with which any medicine may be obtained is gaining favour among physicians and pharmaceutical companies, which is why nearly any *kalpana* of *Vasa* can be found in the literature. It is a substance that has attracted notice due to its usage in many *kalpanas*, and virtually every *kalpana* of this medication is present in classics of ancient literature that draws attention to its utility in various *kalpanas*.

The botanical description of the plant is as follows: [11]

- Kingdom: Plantae
- Division: Angiosperms
- Class: Eudicots
- Order: Lamiales
- Family: *Acanthaceae*
- Genus: *Justicia*
- Species: *Adhatoda (Adhatoda vasica)*

Table 1 Pharmacological Properties of *Vasa* [12]

Latin name	Properties	Actions	Indications	Reference
Adhatoda Vasica	<i>Kashaya</i> , <i>Tikta</i> ; <i>Sheeta</i> ; <i>Laghu</i> ; <i>Vatakrit</i> , <i>Pitta</i> <i>kaphahara</i>	<i>Shwasahara</i> , <i>kasahara</i> , <i>hridya</i> , <i>sheeta paha</i> , <i>artihara</i> , <i>trushna</i> <i>shamak</i> , <i>Chardighna</i> , <i>Mehahara</i> , <i>kushtaghna</i> , <i>kshayapaha</i>	<i>Trushna</i> , <i>shwasa</i> , <i>kasa</i> , <i>arti</i> , <i>jwara</i> , <i>chhardi</i> , <i>meha</i> , <i>kushta</i>	<i>Bhavaprakasha purva</i> <i>Khanda</i> <i>Guduchyadi</i> <i>Varga 249- 250</i>

1.1. Ethanomedicinal uses

Ayurvedic medicine uses the plant *Adhatoda vasica* to treat a variety of chest and respiratory infections [13]. In Sri Lanka, excessive phlegm (mucus containing bacteria, debris, and shed inflammatory cells) and menorrhagia (abnormal blood clotting, disruption of normal hormonal regulation of periods, or problems of the endometrial lining of the uterus) have both been treated with this medication. Additionally, impotence, bleeding piles, and sexual abnormalities are all treated with it [14]. Antispasmodic and anthelmintic drug [15]. Glycodin, a well-known remedy for the treatment of bronchitis, was made from *Adhatoda vasica* leaf extract. Additionally, it has been reported that in the Gora village of Lucknow (Uttar Pradesh, India), 70% of pregnant women use plant leaves to induce abortions [16]. Additionally, it has been discovered that the extracts are quite powerful against tuberculosis. In Indian traditional medicine, the plant's many parts have been used to cure conditions like asthma, joint pain, lumber pain, sprains, colds, coughs, eczema, malaria, rheumatism, swelling, and sexual diseases [17-18].

2. Material & Method

For the current review, Bhaishajya kalpana texts, E-books, research journals, and dissertations were searched, and the data was collected and merged. *Vasa* is used as a primary medication as well as a major component in a variety of formulations.

3. Observation & Results

On search *vasa* formulations are found in various dosage forms either as primary medication or compound preparation as shown in Table no. 2 to 6.

3.1. Vasa swarasa

3.1.1. By Swaras method [19]

The juice, extracted from a fresh drug by pounding it and squeezing through cloth is known as *vasa swarasa*. So, it can be conducted that for the *swarasa* preparation a green drug is first made into paste from then with the help of cloth pouch is made and by applying pressure to this pouch *swarasa* can be obtained. *Vasa swarasa* taken with honey cures *raktapitta*, *jwara*, *kasa*, *rajyakshma* and *kamala*. It pacifies *kapha* and *pitta*.

Table 2 Formulations of *vasa swarasa* according to different texts

Formulation	Indications	Reference
<i>Vasa rasa</i>	<i>Raktakapha Jwara, amlapitta, kamala</i>	<i>Bhavaprakash madhyam khanda 1/ 436</i>
<i>Vasa swarasa</i> (II) With equal quantity of honey	<i>Piitaj – kaphaj kasa, raktapitta</i>	<i>Bhaishajyaratnavali kasarogadhikara 15/21</i>

3.1.2. By Hima method

One kudava (12 gm) powder of dug is soaked into two times of water and left for day and night. Then by filtering it *swarasa* can be obtained. (This method described by *Acharaya Charaka & Sharangdhar* is similar to the Hima kalpana.)

3.1.3. By Phanta method

In case of dry drug which cannot yield out any juice, the coarse powder of drug is boiled in eight times of water and reduced to a quarter which can be also used as *Swarasa*.

3.1.4. By Putapaka method [20]

Some drugs in wet and fresh form cannot produce *swarasa* by usual method then this method is applied. In this method leaves are taken and made into paste this paste is made into bolus form. Then it is wrapped by leaves of *Kashmari*, *vata* etc. and tied with thread and it is covered with paste of clay and the thickness should be two *angulis*. After drying it is subjected to fire till it becomes red then the bolus is taken out, after removing the paste of *godhuma* and leaves the paste of drug is collected and kept over cloth and Squeezed for obtaining *swarasa*.

3.2. Vasa Kalka

Chopping and Pounding Ingredients: Freshly collected *vasa patra*. Procedure: *Vasa kalka* prepared by chopping the freshly collected washed *vasa patra* into small pieces and then converted into *kalka* form by pounding it in Mortar & pestle.

3.3. Vasa kwath ^[21]

Ingredients: Freshly collected *Vasa patra*- 1 part and water – 16 parts. Procedure: It was prepared by reducing the liquid up to 1/8th of the initial quantity on mild heat following standard method of preparation and stained through a non-reacting double layered cotton cloth. Additive: honey. It is indicated in *raktapitta, kshay, kasa, shleshma pitta jwara*.

3.4. Vasavleha^[22]

Ingredients: Freshly collected *vasa patra*.

Procedure: *Vasa swarasa* extraction; it is advised to extract *vasa swarasa* by *putapaka* method in classics, but obtaining enough quantity of *swarasa* by *putapaka* method, we can also use *swedana* method here.

In this method the cleaned *vasa* leaves are placed on the cloth tied over a wide mouthed vessel containing water. The vessel is placed over fire and heated. The water vapours act on the fibres on the leaves and loosen them. Later the leaves are taken *khalva tantra* and triturated to prepare *kalka*. This *kalka* is strained through a clean cloth to obtain *swarasa*.

This extracted *swarasa* in required quantity is taken in a clean stainless steel vessel. It is added with mentioned quantity of sugar and boiled over mild fire. The mixture may be filtered once through a clean cloth after sugar gets completely dissolved to get rid of dirt if present in it. Just before attaining *paka lakshanas*, the prescribed quantity of ghee is added and boiled further. Soon after all the *paka lakshanas* are attained the vessel is taken out from fire and fine powder of *pippali* is added and stirred well. After the mass turns totally cool, honey is added and homogenously stirred. The product is preserved in airtight wide mouthed containers with proper labelling for further therapeutic use. The product will be blackish confection with *tikta- madhura rasa and paka gandha* and indicated in *Rajyakshma, kasa, severe swasa, parshvasula, hritsula, raktapitta* and *jwara*.

Table 3 Avleha prepared by using Vasa as ingredient. *Vasavleha* prepared by different texts

Formulation	Ingredients	Indications	Reference
<i>Vasa khanda kushmanda Avleha</i>	<i>Vasa, Kusmanda, Ghrita, sugar, musta, bhargi, subha, dhatri, trisugandha, ela, shunti, dhanyaka, marich, pippali, honey</i>	<i>Kasa, shwasa, kshay, hikka, raktapitta, halimak, hridroga, amlapitta, pinasa</i>	<i>Bhaishajya ratnavali raktapiitachikisa 13/102-106.</i>
<i>Vasaharitakya Avleha</i>	<i>Vasa, haritaki churna, pippali churna, twak, ela, patra, naagkeshar, ghrita, madhu.</i>	<i>raktapitta, shat, kshay, kasa, shwasa, rajyakshma</i>	<i>Bharat Bhaishajya ratnakar part 4, p.625.(6787)</i>
<i>Vasa avleha</i>	<i>Vasa, manika, sharkara, ghrita, pippali churna, ghrita, madhu</i>	<i>Yakshma, kasa, Darun, shwasa, parsheashoola, hridshoola, raktapitta, jwara</i>	<i>Bhavprakash mandhyam khanda 2 rajyakshmarogadhikara.</i>

3.5. Vasa Granules ^[23]

Ingredients: *Vasa swarasa*,

Procedure: *Vasa avleha*'s granules are prepared using the general way of preparation that is stressed for *khanda paka* [24]. The formulation composition is similar to that of *vasa avleha*. *Swarasa* (expressed fresh juice) was extracted from leaves of *vasa*. *Sharkara* of specified quantity was added to *swarasa* and subjected to heat maintaining temperature in between 90-100°C (*mandagni*) till more than two thread consistency of sugar syrup is formed. At this stage, the contents were removed from the heat source and specified amount of *go-ghrita* was added. When the contents were cooled down to 60-65°C, fine powder of *pippali* was added and continuous stirring was done. When the temperature of the contents

reached to 30-35°C. Honey was added and the contents were further stirred thoroughly to make a uniform mass. This mass was passed through 7# sieve to obtain granules, completely dried granules were stored in air tight container. Following the same procedure, total eight batches of granules were prepared by changing the proportions in the ingredients (Especially in Sugar, honey and ghee). It is indicated in *kasa, shwas*.

3.6. 6. *Vasakasava* [25]:

Ingredients: Vasa, guda, dhataki pushpa, twak, ela, tejpatra, naagkeshar, kankola, shunthi, marich, pippali.

Procedure: The specified amount of water is combined with the coarse vasa powder, and a quarter of it is then heated in a wide-mouthed kettle. Refine it. Jiggery is added to this decoction, boiled, and thoroughly blended. The other ingredients are mixed in a fine powder within a container that has been coated with ghee. The container is sealed and left for 15 days to ferment. It is filtered and kept in a clear, airtight container after the fermentation process has been verified to be complete. It is mentioned in every kind of shoth.

3.7. 7. *Vasa Arishta* [26]

Ingredients: Vasa, guda, dhataki pushpa, twak, ela, tejpatra, naagkeshar, kankola, shunthi, marich, pippali.

Procedure: Kwath dravya is cleaned, dried, chopped, and then crushed to create a coarse powder. Now, this powder is mixed with the specified amount of water, cooked until it is reduced to a quarter, and then filtered to create a decoction. Decoction jiggery is then added and thoroughly blended into this. Stir in the prakshepa dravyas to get a homogeneous mixture. This decoction is then put to a clean, airtight jar, sealed, and taken to the fermentation room where it is continuously monitored until the process is finished. Following the completion of the fermentation process, the decoction is filtered and stored in dry bottles away from heat, light, and moisture. It is recommended for the treatment of a number of other respiratory illnesses, including the common cold, bronchitis, and sinusitis.

3.8. *Vasa ghrith* [27]

Ingredients: Plant vasa along with its roots, leaves, branches, flowers and ghee.

Procedure: Obtain 1.250 kg. Measure of plant vasa along with its roots, leaves, branches and flowers. Take water in eight times of this measurement. Decoct both of them till original quantity is reduced to a one-eighth. Put the preparation a large metallic pan and add to it 1 kg of *murcchita* cow ghee and 250 ml. of the *kalka* of plant vasa. Cook the preparation again. When the *kalka* is properly cooked remove out the preparation and strain it into a glass ware. It is indicated in It is indicated in *adhomarga gata raktapitta, kasa*, breathing troubles, fever, *sula, gulma*, enlargement of liver and spleen, heart troubles, anemia, *timira, visarpa and swara bheda*.

Table 4 *Ghritha* prepared by Vasa as ingredient

Formulation	Ingredients	Indications	Reference
<i>Vasa ghritha</i>	<i>Vasa panchang, ghritha</i>	<i>Kasa, shwasa, pratishyaya, tritiyak, chaturthik jwara, raktapitta, kshyay, vishvikara</i>	<i>Charak chikitsa 6/5</i> BR 13/124
<i>Vasadi ghritha</i>	<i>Vasa panchang, go ghritha or ajaghritha</i>	<i>Raktavikara, urdhvaga raktapitta</i>	<i>Yog ratnakara raktapittachikitsa p.357</i>
<i>Vasadya ghritha</i>	<i>Vasa, guduchi, nimba twak, ashwagandha, naagbala arjun twak. Pippal, pippalimula, chavya, chitrak, shunthi, ajadugdha.</i>	<i>Sosha</i>	<i>Bharat Bhaisjya Ratnakar part 4 p.639 (6742)</i>

3.9. *Vasa taila* [28]

Ingredients: Vasa kalka, vasa kwath, Tiltaila.

Procedure: Take taila (4 Parts), vasa kwath (16 parts), vasa kalka (1 part) together and give it mandagni. When kwath get evaporates filter the taila.

Table 5 Taila prepared by Vasa as ingredient

Formulation	Ingredients	Indications	Reference
Vasa-chandanadya taila	<i>Kalka dravya</i> - <i>Shwet chandan, Renukabeej, Gandha marjararanda, ashwagandha, gandhaprasarini, twak, suskshma ela, patra, pippalimula, naagkeshar, meda, mahameda, shunthi, pippali, marich, rasna, kushta yashtimadhu, shailaja, kachur, , devdar, priyangu, bibhitak</i> <i>Kwath dravya</i> - <i>Vasa panchanga. Laksharasa, dadhimastu, raktachandana, guduchi, bharangi, kantakari, dashamoola, Tila taila.</i>	<i>Kasa, jwara, raktapitta, pandu, halimak, kamla, urkshat, kshinata, rajayaksma, all types of shwasa</i>	<i>Bhaishajya Ratnavali kasarogadhikara 196-202</i>
Vasarudra taila	<i>Amalaki, haritaki, vibhitak, nimbatwak, kantakari, bruhati, punarnavamul, haridra, daruharidra, vasapanchang, nirgundipatra, patola, hartaal dhaturbeej, manshila, kushta, langali, dadim,, apamarga, vatsanabh, jyantipatra, karanj, katphala, tila taila, guduchi kwath, godughdha, vasa swarasa</i>	external application (<i>abhyanga</i>) in <i>Daha, kushta, dushtavrana, visarpa, vidradhi, nadivrana, vatarakta, darun shiroroga, galaganda, sleepada, arbuda, vataroga, darun antravridhi etc.</i>	<i>Bhaishajya ratnavali kushtarogadhikara 318-325.</i>

3.10. Vasa guggulu: [29]

Ingredients: Vasa, nimba, patola, triphala, bijaka, yavasa.

Procedure: Take purified Guggulu and drava dravya in vessel. Give heat to it. After preparing the guggulu pak add other drugs to it. Make homogenous mixture of it and roll tablets of even size. It is indicated in amlapitta and predominance of kapha.

3.11. Vasa Khanda: [30]

Ingredients: Vasapanchang, sharkara, haritakiphala twak churna, pippali churna, madhu, tejapatra, ela, twak, Naagkeshar, haritakichurna, madhu.

Procedure: Take vasapanchang bharad in vessel with eight times of water and reduced it upto one fourth. Add sharkara to it. Make sharkara paka after attaining pakalakshana add haritaki churna and other prakshep dravya to it. Make a homogenous mixture of it. Allow it to cool down. After that madhu to it. And stored it in air tight container. It is indicated in raktapitta, urkshata, kshaya, kasa, shwasa, rajayakshma.

3.12. Shivaphala pindi (Avleha kalpana) : [31]

Ingredients: Vasa, Patha, patola, yava, candana, dhanya, dhatri, varanga, nagakeshara, kana, abhaya.

Procedure: All ingredients are taken in required quantity in a clean stainless steel vessel. It is added with mentioned quantity of sugar and boiled over mild fire. The mixture may be filtered once through a clean cloth after sugar gets completely dissolved to get rid of dirt if present in it. Just before attaining paka lakshanas, the prescribed quantity of ghee is added and boiled further. Soon after all the paka lakshanas are attained the vessel is taken out from fire and stirred well. It is equivalent to Avleha kalpana. It is given in amlapitta, aruchi, jwara, daha, shosha.

3.13. Modaka : [32]

Ingredients: Vasa, shwet jeeraka, krushna jeeraka, sushavi, surabhi, vacha, saindhava, yaakshara, yavanika.

Procedure: All ingredients powdered, fried with ghee, added with khanda (sugarcandy) and made into balls. This consumed according to the strength of digestive fire, relieves the woman from vaginal disease.

3.14. Vasadi vati :[33]

Ingredients: Vasapatraghana, arkamulatwak, Shuddha ahiphen, karpur, vasapatra swarasa.

Procedure: Take vasapatra swarasa 250 ml in stainless steel vessel, give mild fire to make Ghana. Take this Ghana in mortar and pestle, add arkamula twak churna , Shuddha ahiphen churna, karpur churna to it. Add little water to the mixture and triturate well. After making homogenous mixture make table of 250 mg each. It is indicated in Urakshat, shwas, raktapitta, galaroga, raktatisaar, rajyakshma, raktapradar, 5 types of kasa, shoth, grahani, kshay roga.

3.15. Vasadi lepa: [34]

Ingredients: Vasa patra, Shankh churna

Procedure: Take vasa patra swaras , add shanka churna in it and apply it externally to counter foul smell of body.

Table 6 Description of formulation of vasadi lepa

Formulation	Ingredients	Indication	Reference
Vasadi lepa	Vasa patra, haridra churna, gomutra	Kacchu (kandu)	Bharat Bhaishajya ratnakar part 4 p.688

4. Discussion

One of the most important branches of Ayurveda is *Bhaisajya Kalpana*, which deals with drug awareness, including drug identification, procurement, processing, preparation, and application [35]. It makes the medication more palatable, durable, and potent by adding or generating special properties known as *vishesh gunantardhana (sanskar)*, and it eliminates the toxic effects of the medication by *shodhana karma* [36]. It aids in the adjustment of dosha depending on the severity of the illness. It creates medications in accordance with patient and disease needs. Two factors dominate the development of various dosage forms. The first one belongs to the physician concerned and includes the immune response of the patient and severity of the disease (*Atura and vyadhi bala*) [37]. The second addresses issues related to medicine, such as bioavailability, palatability, dosing accuracy, long shelf life, and so forth. The *Acharya* in Ayurveda were adamant about the superior effects of *vasa*. There is no reason for patients with *rakta pitta*, phthisis, and *kasa* to be disappointed in the existence of *vasa*, which is the hope of life [38].

Vasa (*Adhatoda vasica* Linn) is a popular medicine that is readily available practically year-round. Nearly every dosage forms of *vasa* is discovered documented in the Ayurveda books, which is due to the fact that any drug's ease of accessibility is becoming more and more popular among medical professionals and pharmaceutical companies. According to *Acharya Charak*, *Vasa* satisfies the requirements for *Sampanna Aaushadh*. On *Vasa*, previous study has been documented. The literature has shown that the principal components of *A. vasica*'s various portions, which have been primarily responsible for their diverse range of pharmacological potential, are quinazoline-based alkaloids [39]. The works of *Koushika* and *Panini* define *vasa*, and the other commentators refer to it as *vrishaka* and *atarusha (Kou.Su.8/16 & P.Gr 8/2/9)* [40]. *Vasa* is a well-known herb for treating febrile illnesses and respiratory conditions [41]. Nearly all ayurveda seers have acknowledged its significance in respiratory illnesses. It is categorically stated that it is a cure for *rakta pitta*, *kshaya*, and *kasa* by *Sodhala* and *Yogaratra kara* [42]. *Vasa* is a medicine that attracts attention due to its use in many *kalpanas*, and practically all of these *kalpanas* are available in a classic recapitulation of ancient literature that highlights the value of *vasa* in various formulations [43]. *Vasa* lozenges prepared for the pediatric group showed significant results in *kasa* [44].

A. vasica is a significant medicinal herb well known for its uses in numerous ancient medical systems, including Ayurveda, Siddha, and Unani, among others due to its wide range of pharmacological properties as shown in table no 1. It also demonstrates various pharmacological actions like Anti-asthmatic and bronchodilator activity [45], Anti-ulcer activity [46], Anti-allergy activity [47], Anti-tubercular activity [48], Abortifacient and uterotonic action [49], Insecticidal activity [50], and antibacterial activity [51]. Due to the vast spectrum of biological actions it exhibits, it may be a valuable source for the development of novel, effective therapeutic compounds. *Adhatoda vasica* extract has demonstrated potential as a radioprotector against medically induced mutations, which may prove to be helpful in the therapy of cancer in the future [52] with both low and high medication doses. A study was done to examine the effects of ovarian cancer on proliferative and metastatic processes [53]. *Vasa* is a medicine that can be used to treat covid 19 both as curative and preventive aspect [54].

5. Conclusion

Thus, the current review would be helpful in the advancement of today's research in the development of new novel bioactive compounds derived from *Vasa* (*Adhatoda vasica* linn.) medicinal plant which would find a large number of applications in pharmaceutical and agricultural fields. Suitable dosage forms are needed for protection of the drug from destructive influences of the atmospheric oxygen or moisture, to mask bitter taste and foul odor, to provide extended drug action through controlled release mechanism. *Vasa* widely used in practice to treat various diseases. So to achieve above factors different dosage forms of *vasa* are used. This article is an earnest attempt to find out the importance and diversified aspect of *Vasa* in Various texts.

Compliance with ethical standards

Acknowledgments

Author would like to thanks the management of DMIHER for motivating to write this manuscript.

Disclosure of conflict of interest

No Conflict of interest.

References

- [1] Rathi B, Rathi R. Principals of ethical ayurveda prescription writing in clinical practice: A literature review. J Datta Meghe Inst Med Sci Univ 2019;14:S97-102.
- [2] Charaka Samhita. Chakarpani commentary. Jadavaji T, editor. Sutrasthan. 5th ed. Varanasi: Chaukhambha Sanskrit Sansthan; 2001. p. 63.
- [3] Ibid Charaka Samhita. Kalpa sthana, 1/10, p. 653
- [4] Sastri P. Sharangadhara Samhita. Dipika commentary by Adhamalla and Gudarthadipika commentary, Kashiram, editor. Madhyam khanda. 5th ed. Varanasi: Choukhambha Orientalia; 2002. p. 206.
- [5] Ibid Sharangadhara Samhita. Madhyam khanda, 9/1-2, p. 212
- [6] Ibid Sharangadhara Samhita. Madhyam khanda, 10/2, p. 233
- [7] Ibid Sharangadhara Samhita. Purva khanda, 1/52-53, p. 13
- [8] Dhote M, Rathi B, Dongre R. Pharmaceutical evaluation of VidangadiLepaguti- an Ayurvedic topical formulation. International Journal of Ayurvedic Medicine, 2020: 11(2); 212-217
- [9] Charaka Samhita, Chakarpani commentary. Jadavaji T, editor. Chikitsasthan. 5th ed. Varanasi: Chaukhambha Sanskrit Sansthan; 2001. p. 379.
- [10] Mishra BS, Vaishya R. Bhava Prakasha. 11th ed. Varanasi: Chaukhambha Sanskrit Sansthan; 2004. p. 320.
- [11] Nadkarni KM, Nadkarni AK. Indian Materia Medica, Vol. I & II. Popular Prakashan Private Limited, Bombay, India. 1976, p.40.
- [12] Murthy srikantha K.R, Bhavprakasa of bhavamishra, Varanasi: Chaukhambha publishers; p.249-250.
- [13] Maikhuri RK, Gangwar AK. Ethnobiological notes on the Khasi and Garo tribes of Meghalaya, Northeast India. Economic Botany. 1993 Oct; 47(4):345-57.
- [14] Nyman U, George V. Glimpses of Indian Ethno pharmacology. Tropical Botanic Garden and Research Institute; 1995. pp. 309-383.
- [15] Kumar A, Ram J, Samarth RM, Kumar M. Modulatory influence of *Adhatoda vasica* Nees leaf extract against gamma irradiation in Swiss albino mice. Phytomedicine. 2005 Apr 20; 12(4):285-93.
- [16] Nath D, Sethi N, Singh RK, Jain AK. Commonly used Indian abortifacient plants with special reference to their teratologic effects in rats. Journal of Ethnopharmacology. 1992 Apr 1;36 (2):147-54.
- [17] Jain SK. Dictionary of Indian folk medicine and ethnobotany. 1991.

- [18] Rathi B, Khobragade P, Rathi R, Gupta R. Ethno-botanical Survey on Medicinal plants used by Tribes of Karanja (Ghadge) Tahsil of Wardha District, Maharashtra, India. *International Journal of Ayurvedic Medicine*.2021;12(1):43-52.
- [19] Rao prabhakar G., Sarngadhara samhita madhyam khanda, Chaukhamba orientalia, first edition 2013, New delhi, p.66.
- [20] Sastri Pandit parasurama , Sarngadhar samhita madhyam khanda, Chaukhamba orientalia, Seventh edition,Varanasi, 1/34 p.143
- [21] Rao prabhakar G., Sarngadhara samhita madhyam khanda, Chaukhamba orientalia, first edition 2013, New delhi, p.86.
- [22] Lochan kanjiv, Bhaishajyaratnavali of shri govinda dasji, volume 1, Chaukhamba orientalia, reprint 2008, Varanasi, p.780.
- [23] Paneliya AM, Patgiri B, Galib R, Bedarkar P, Prajapati PK. Pharmaceutical development of granules of vasa avaleha. *Ann Ayurvedic Med*. 2013; 2: p.16-21.
- [24] Chavhan NS, Rathi B. Pharmaceutico-analytical study of Adraka Khanda. *Journal of Indian System of Medicine*. 2019 Apr 1;7(2):112.
- [25] Shah chaganlaal nagindaas, Bharat Bhaishajya ratnakara, Part 4th, New delhi, p. 683.
- [26] Sodhala SV, Gadanigraha CS. Chaukhamba Sanskrit Sansthan. Varanasi, Reprint. 2012.p.450
- [27] Lochan kanjiv, Bhaishajyaratnavali of shri govinda dasji, volume 1, Chaukhamba orientalia, reprint 2008, Varanasi, p.761
- [28] Dhurve k, Chaudhary a. sneha kalpana – a probable pharmaceutical explanation. *aryaidyan*.2007; p.181-189.
- [29] Sharma priya vrat, chakradatta, Varanasi: Chaukhambha publishers; 2007; p.486.
- [30] Mishra siddhi nandan, Bhiashajyaratnavali, Varanasi: Chaukhambha publishers; p.398.
- [31] Murthy srikantha K.R, Bhavprakasa of bhavamishra, madhyam khandaVaranasi: Chaukhambha publishers; p.226
- [32] Murthy srikantha K.R, Bhavprakasa of bhavamishra, madhyam khanda Varanasi: Chaukhambha publishers; 70/49-50.
- [33] Mishra siddhi nandan, Bhiashajyaratnavali, Varanasi: Chaukhambha publishers; p.452.
- [34] Shah chaganlaal nagindaas, Bharat Bhaishajya ratnakara, Part 4th, New delhi, p. 688.
- [35] K Kumar, Modulatory influence of Adhatoda vasica Nees leaf extract against gamma irradiation in Swiss albino mice. *Phytomedicine*, 2005, 12: 285-293.
- [36] Murulidhar N, Kumar MB. A unique process: concept of shodhana. *World J Pharm Pharm Sci*. 2016 Sep 8; 5: 657-3.
- [37] Jadavaji T, editor. Sutrasthana. 5th ed. Varanasi: Chaukhambha Sanskrit Sansthan; 2001. Charaka Samhita. Chakarpani commentary; p. 31.
- [38] Mishra siddhi nandan, Bhiashajyaratnavali, Varanasi: Chaukhambha publishers; p.745.
- [39] Kumar N. Pharmaceutical attributes of Vasa (Adhatoda vasica Linn.) -A review. *World J Pharm Res*. 2016 Feb 2; 5: 437-55.
- [40] Dravyaguna vijnana by JLN shastry, Chaukhambha orientalia, Varanasi 2008, p.407.
- [41] Dravyaguna vijnana by JLN shastry, Chaukhambha orientalia, Varanasi 2008, p. 407.
- [42] Dravyaguna vijnana by JLN shastry, Chaukhambha orientalia, Varanasi 2008, pg 407.
- [43] Gupta A, Prajapati PK. A clinical review of different formulations of Vasa (Adhatoda vasica) on Tamaka Shwasa (asthma). *Ayu*. 2010 Oct;31(4):520.
- [44] Ali S, Rathi R, Rathi B. A Comparative Study on the Efficacy of KantkariandVasa Lozenges in Children with Kasa (Cough)-Study Protocol *Journal of Pharmaceutical Research International*, 2021;33(31B): 25-33
- [45] Dorsch W, Wagner H. New antiasthmatic drugs from traditional medicine. *Int Arch Allergy Appl Immunol* 1991; 94(1-4):262-5.

- [46] Chaturvedi GN, Rai NP, Dhani R, Tiwari SK. Clinical trial of Adhatoda vasica syrup (vasa) in the patients of non-ulcer dyspepsia (Amlapitta). *Ancient Science of Life* 1983; 3(1):19.
- [47] Paliwa JK, Dwivedi AD, Sihgh S, Gupta RC. Pharmacokinetics and in-situ absorption studies of a new anti-allergic compound 73/602 in rats. *Int J Pharm* 2000; 197(1-2):213-20.
- [48] Grange JM, Snell NJC. Activity of bromhexine and ambroxol, semi-synthetic derivatives of vasicine from the Indian shrub Adhatoda vasica, against Mycobacterium tuberculosis in vitro. *Journal of Ethnopharmacology* 1996; 50(1):49
- [49] Claeson UP, Malmfors T, Wikman G, Bruhn JG. Adhatoda vasica: a critical review of ethnopharmacological and toxicological data. *Journal of Ethnopharmacology* 2000; 72:1.
- [50] Srivastava AS, Saxena HP, Singh DR. Adhatoda vasica, a promising insecticide against pests of storage. *Lab Dev* 1965; 3(2):138
- [51] Patel VK, Venkatakrisna BH. In vitro study of antimicrobial activity of Adhatoda vasika Linn. (leaf extract) on gingival inflammation a preliminary report. *Indian J Med Sci* 1984; 38(4):70-2.
- [52] Sharma P, Jadon RS, Singh D, Ganesh N. Radiation protective potentiality of Adhatoda vasica. *International Journal of Phytomedicine*. 2009 Jan 1;1(1).
- [53] Nikhitha JN, Swathy KS, Chandran RP. In vitro anticancer activity of ethanol extract of Adhatoda vasica Nees on human ovarian cancer cell lines. *Journal of Genetic Engineering and Biotechnology*. 2021 Dec; 19(1):1-9.
- [54] Bhokardankar P, Rathi B, Khan M, Rathi R. COVID-19 pandemic: Home remedies for immunity boosting. *International Journal of Research in Pharmaceutical Sciences*. 2020, 11 (SPL)(1),734-738

Authors short biography



Dr. Aditi Ravindra Shinde; PG Scholar Dept. of RS and BK, MGACHRC

- By combining academic excellence, a deep-rooted understanding Ayurveda, and a commitment to scientific inquiry, Dr. Aditi R. Shinde aspires to make significant contributions to the field of Research in Ayurveda [Evidence based Medicine].
- She has actively engaged with the scientific community, publishing research papers in peer-reviewed journals such as [JPRI] focusing on topics related to Ayurveda.
- Currently working on Thesis project Development of Nutraceutical in Ayurveda i.e. Polyherbal compound for muscle gain in Gym going healthy volunteers.
- Working on Preparation and standardization of herbal formulations as well as Cosmetic Preparations.
- Believes in the Ayurvedic route to great health which involves two steps: 1. Doing less 2. Being more.