



Review Article

AN EXPLORATION INTO THE PHARMACOLOGICAL PROPERTIES AND THERAPEUTIC POTENTIAL OF *PANALVERADI KWATHA* WITH SPECIAL EMPHASIS TO ITS EFFECT ON RESPIRATORY DISORDERS - *SWASA & TAMAKA SWASA*

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Article info

Article History:

Received: 28-10-2024

Accepted: 23-11-2024

Published: 20-12-2024

KEYWORDS:

Upper respiratory tract, Respiratory infections, Air borne pathogens, *Panalveradi Kwatha, Swasa, Tamaka swasa.*

ABSTRACT

Plants form the main part of the environment that surrounds us and has become the prime source of medicine and food since time immemorial. Ayurveda has always approached health in both preventive and curative aspects which itself is the main principle of Ayurveda, to maintain the health of a healthy individual, and to overcome the diseases in a person suffering from illness. Diseases pertaining to general health as well as a specific system - targeted diseases have become prevalent in the recent years. Among these a grave increase in the diseases affecting the respiratory system has been noted. Poor air quality, prevalence of antibiotic-resistant microorganisms, newer generations of virulent viruses have all proved to be the possible cause. Recent years witnessed the emergence of Covid pandemic which claimed the life of millions across the world. Even today, many variants of the virus can be seen detected. Diseases affecting the respiratory system drastically affect the person's general immunity and quality of life. Among the medicinal interventions put forward by various health systems to combat the air borne pathogens and diseases, Ayurvedic single and compound formulations proved to be significantly useful. *Panalveradi kwatha* is one such formulation mentioned in the text *Sahasrayogam* which is commonly used by physicians of South India to combat side effects of respiratory infections as well as respiratory diseases like bronchitis, bronchial asthma. This article is intended to explore the pharmacological potential of *Panalveradi Kwatha* in the treatment of diseases pertaining to the upper and lower respiratory tract.

INTRODUCTION

Breath and respiration are one involuntary function that maintains the rhythm of health and ensures the life status of every cell, tissue and organ in the body. Any pathology (pathogen born/ hereditary/ infectious origin) pertaining to the respiratory system drastically affects the quality of life of a person.

Breathing and respiration helps in the transport of oxygen and carbon dioxide to and from every cell of the body respectively which in-turn maintains the vitality of the cell.

Shortness of breath, breathing difficulty, respiratory tract infections, cough- of varying magnitudes are all some of the most common complaints that affect human society over time. According to Ayurveda, clinical entity mentioned along with cough, difficulty in breathing, recurrent attacks of dyspnoea along with wheezing, increased respirations are regarded as *Swasa roga*. *Swasa roga* is a major health issue that mainly affects the *Pranavaha srotas*. *Swasa roga* has been mentioned by *Acharya* as a *Yapya vyadhi*^[1]. When *Prana vayu* which moves in *Pratiloma gati* preceded by *Kapha dosha* obstructs the passage and itself being obstructed moves sidewise, thereby producing *Kapha*.

In simple terms, *Swasaroga* can be defined as a disease/condition in which respiration and exchange of gas is disturbed. *Swasa roga* is a *Vata-kaphajanya vyadhi* that occurs after the vitiation of *Pranavaha and*

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Quick Response Code	
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Udakavaha srotas resulting in Srotodusti finally leading to Swasa roga.^[2]

Pathogenesis

Aggravated Vata enters the week Pranavaha srotas and dislodges Avalambhaka kapha from its site subsequently leading to the constriction of bronchioles and its rough nature. There is formation of Ama within the intestines which in association with the slimy and sticky nature of Avalambhaka kapha causes Sroto dusti in Pranavaha and Udakavaha srotas causing ultimately Swasaroga.

AIM OF THE STUDY

Aim of the current study is to explore the pharmacological and therapeutic potential of the ingredients as well as the formulation "Panalveradi kwatha" as a whole in combating respiratory diseases as well as upper and lower respiratory tract infections.

MATERIALS AND METHODS

Relevant information regarding the formulations and ingredients with special emphasis on their pharmacological properties, actions were referred and collected from various Samhitas and Nighantus. All available information of drugs were collected from all available sources including online authentic articles published. All the ingredient drugs

were cross referenced with all available details on the drug nomenclature and pharmacognostic properties.

Pharmacological and therapeutic evaluation conducted with the drug and their parts were collected from the research articles available online through PubMed search engine.

Pharmacological and therapeutic actions of the drug that was already published which were relevant to the current study was considered and analyzed to prove the pharmacological and therapeutic potential of the formulation.

Ingredients of Paanal veradi kwatha^[3]

- Asvasakotah - *Glycosmis arborea* (Roxb.) DC
- Ikshu - *Saccharum officinarum* Linn.
- Bilwa - *Aegle marmelos* (Linn.) Corr
- Laja - *Oryza sativa* Linn
- Ardraka - *Zingiber officinale* Rosc.
- Jeeraka - *Cuminum cyminum* Linn.

Indications of Paanal veradi kwatha^[4]

Swasa - Upper and lower respiratory tract infection/ bronchial asthma, respiratory distress.

Dosage

Dosage is typically fixed after assessing the severity of the condition or as per the advice of the physician.

Table 1: Ingredient drugs with Botanical name, Family and Parts used^[5]

Drugs	Botanical Name	Family	Parts Used
Asvasakota	<i>Glycosmis arborea</i> (Roxb.) DC.	Rutaceae	Root, stem, leaves
Ikshu	<i>Saccharum officinarum</i> Linn.	Poaceae	Roots, stem
Bilwa	<i>Aegle marmelos</i> (Linn.) Corr.	Rutaceae	Roots, leaves, fruits
Ardraka	<i>Zingiber officinale</i> Rosc.	Zingiberaceae	Rhizomes
Jeeraka	<i>Cuminum cyminum</i> Linn.	Apiaceae	Fruits
Laja	<i>Oryza sativa</i> Linn.	Poaceae	Dried puffed rice paddy

Pharmacological property of drugs in Panalveradi Kwatha

According to Ayurveda, the action potential or its mode of action can be attributed to its pharmacological properties or Rasapanchaka. Various factors in the pharmacological properties namely Rasa, Guna, Virya, Vipaka could attribute to the function of the drug. In compound formulations the cumulative action of the formulation will always be influenced by the pharmacological properties of its ingredient drugs.

Table 2: Pharmacological properties

Drug	Rasa (Taste)	Guna (Quality)	Virya (Potency)	Vipaka (Post digestive taste)
Aswasaakhota ^[6]	Tikta, Kashaya	Laghu Ruksha	Ushna	Katu
Ikshu ^[7]	Madhura	Guru, Snigdhasara	Sita	Madhura
Bilwa ^[8]	Kashaya, Tikta, Katu	Laghu ruksha	Ushna	Katu
Ardraka ^[9]	Katu	Guru, Tikshna, Ruksha	Ushna	Madhura
Jeeraka ^[10]	Katu, Madhura -Dh.Ni	Laghu, Ruksha	Ushna	Katu
Laja ^[11]	Madhura, Kashaya	Laghu, Ruksha	Hima	Madhura

Pharmacological potential of a formulation can be assessed mainly by assessing the pharmacological action of individual drugs on each component of the body like *Dosha, Dhatu, Agni, Mala, Srotas* etc.

Table 3: Pharmacological action of ingredient drugs in Paanalveradi Kwatha

Action Drugs	Ekadosha	Dwidosha	Tridosha	Dhatu	Agni	Mala	Ama
Aswasaakhota	Kaphaghna Kaphanissaraka	Kaphavatasamaka	-	Raktakrit	Dipana		
Ikshu	Kaphakara	Raktapittaghna vatapittahara	Tridosahara	Balya, vrishya Brihmana	Dipana Ruchya	Mutrala	
Bilwa							
Ardraka	Vatakaphahara		Vrishya Hridya		Dipana Ruchya	Bhedana	
Jeeraka	Kaphaghna Pittala vatahara	Vatakaphahara		Hridya medhya	Dipana Pachana Ruchya	Grahi	Pachana
Laja	Pittahara kaphahara	Pittakaphahara	Balya Medahara lekhana	Tarpana Lekhana	Dipana		

Table 4: Therapeutical indication of ingredient drugs in Paanalveradi Kwatha

Drugs	Indications
Asvasakota	Sotha, Kamala, Swasa, Kaphajaswasa, Kustha
Ikshu	Raktapitta, Trishna, Daha, Murcha, Swasa, Kahphamedoroga
Bilwa	Shoola, Amavata, Grahini, Swasa, Kaphatisara, Agnimandhya
Ardraka	Shitapitta, Badhavit, Agnimandhya, Swasa, Kasa, Murcha, Nidra
Jeeraka	Arochaka, Atisara, Murcha, Atisara, Adhmana, Swasa, Kaphaja Swasa
Laja	Chardi, Atisara, Daha, Meha, Medoroga, Swasa, Chardi

Possible mode of action of Panalveradi kwatha on Pranavaha srotas and associated respiratory diseases

Swasa is mentioned by Acharyas as a *Vata-kaphaja vyadhi* which mainly causes the obstruction of *Pranavaha* and *Udakavaha srotas*. Looking at the pathogenesis of the disease, there is presence of *Ama* which causes *Srotodusti* along with aggravation of *Vata* and *Kapha dosha*.

Asvasakota- *Asvasakota* (*Glycosmis pentaphylla* (Retz)). DC is a widely distributed plant that has numerous applications in ethnomedicine. Recent researches have established that the drug possesses anti-inflammatory, antioxidant, hepatoprotective, anti-ulcer, chemoprotective, antiviral properties^[12]. Looking at the pharmacological properties of the drug (Table 2), the drug possesses *Laghu, Ruksha guna, Ushna virya* and *Katu vipaka* all of which helps to overcome *Kapha dosha* vitiation. *Tiktha, Kashaya rasa* helps to alleviate the aggravated *Vata dosha*. In terms of its pharmacological properties, it can be established that the drug has excellent *Vata-Kaphahara* action. Looking at the pharmacological action (Table 3), the

drug alleviates both *Vata* and *Kapha dosha*, in addition the drug possesses *Kaphanissaraka* action which can be correlated to expectorant activity. The *Dipana* action of the drug is brought about by the virtue of its *Ushna virya* and *Katu vipaka* which in turn on administration of the drug would help to overcome the *Ama* and *Agnimandhya*. It is also specifically mentioned that the fruit of the drug is exclusively indicated to overcome *Kapha dosha* and *Kasa roga* associated with *Kapha* which would again prove helpful in both *Swasa* and *Kasa rogas* pertaining to the *Pranavaha srotas*. Overall, considering the pharmacological properties and action of the drug, it is an excellent inclusion to the formulation.

Ikshu- *Ikshu* mainly acts on *Kapha* and *Pitta*. It helps to reduce aggravated *Pitta dosha* and increases *Kapha dosha* by the virtue of its pharmacological properties. Even though *Ikshu* is *Pittahara* in nature, it acts as *Dipana* and *Ruchya* which assists in overcoming *Ama* and *Agnimandhya*.

Bilwa- On exploration of the pharmacological properties of the drug (table 2), it can be inferred that the drug will promote *Pitta dosha* by the virtue of its

Katu vipaka and *Ushna virya*. The drug *Bilwa* possess *Tikta, Katu* and *Kashaya rasa* which helps to overcome aggravated *Kapha dosha* and promotes *Agni deepana*. By the virtue of *Ushna virya*, it helps to alleviate *Vata dosha* as well.

Ardra- On exploration of the pharmacological properties of the drug (table 2), it can be inferred that the drug *Ardra* possess *Katu rasa* and *Madhura vipaka* along with *Ushna virya*. Because of *Ushna virya, Katu rasa* and *Teekshna guna*, it acts as a potent *Dipana* and *Pachana Dravya* by increasing *Pitta*. By the virtue of *Ushna virya*, it also overcomes aggravated *Vata dosha*.

Jeeraka- On exploration of the pharmacological properties of the drug (table 2), it can be inferred that the drug *Jeeraka* possess *Kaphaghna* and *Vatakaphahara* property by the virtue of its *Laghu-Ruksha guna, Katu rasa, Katu vipaka* and *Ushna virya* which helps to overcome both aggravated *Vata* and *Kapha*. The drug is also effective in *Amapachana* and *Agnideepana* due to the *Ushna virya* and *Katu vipaka*. By the virtue of *Grahi karma, Jeeraka* also helps to dry up excessive *Kapha/Kledatwa* also proving to be an effective drug in conditions like *Kaphaja swasa*.

Laja- *Laja* is *Pittakaphahara* in nature by the virtue of its *Laghu ruksha guna* and *Madhura vipaka*.

Looking at the therapeutic indications of all drugs mentioned in the formulation, it is evident that all the drugs are individually indicated in *Swasa roga*. The *Vatakaphahara* action and its therapeutic potential is substantiated basically by the Pharmacological properties and actions exhibited by the individual drugs. Also, majority of the drugs mentioned in the formulation possess *Dipana* action which helps to overcome the *Agnimandhya* and promote *Ama pachana*.

If we take into consideration a cumulative pharmacological property, it is evident that the drug will possess majority of *Vata Kapha hara* properties and action. Majority of the drugs possess *Laghu, Ruksha, Teekshna* and *Ushna guna* which are antagonistic to the *Gunas* of *Kapha dosha* thereby normalizing *Kapha dosha*. Likewise, majority of the drugs possess *Ushna virya* which is antagonistic to the property of *Vata dosha*, thereby keeping the aggravated *Dosha* in check.

All of the above said properties force the drug to act on *Prana- Udaka* and *Anna vaha srotas* causing *Samprapti vighatana* to occur in a systematic format starting from *Amashaya*, where the *Deepana - Pachana- Ruchya* properties helps in *Ama pachana*. The associated *Guna karma* of the drugs liquifies the *Kaphadosha*, thereby removing the *Srotorodha* and causing *Vatanulomana*. This causes *Vata* to attain natural state and ultimately bringing about relief in symptoms.

Considering the above stated and established facts, it can be concluded that the formulation "*Panal veradi kwatha*" is an important and effective remedy against respiratory distress, upper RTI, *Swasa*, wheezing, bronchial asthma etc. The pharmacological property, actions and therapeutic indications of all individual component drugs makes sure that the drug can be used both as a prophylactic measure as well as curative measure.

CONCLUSION

Hence, we can conclude from the review that all the drugs mentioned in the formulation possess the pharmacological and therapeutic potential that could potentially overcome disorders caused by *Vata* and *Kapha dosha* affecting the *Pranavaha srotas*.

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Cite this article as:

Sethu R, Anu Sreedevi, Krishna Priya A. An Exploration into the Pharmacological Properties and Therapeutic Potential of Panalveradi Kwatha with Special Emphasis to its Effect on Respiratory Disorders- Swasa and Tamaka Swasa. International Journal of Ayurveda and Pharma Research. 2024;12(11):73-77.

<https://doi.org/10.47070/ijapr.v12i11.3453>

Source of support: Nil, Conflict of interest: None Declared

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