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## REVIEW ARTICLE

# A Systematic Review on Therapeutic Uses of *Panchavalkala*

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**ABSTRACT**

*This systematic review explored key findings of various studies published to evaluate therapeutic uses of Panchavalkala. This review involves various studies based on the inclusion and exclusion criteria, as per the standard norms of systemic review study. This study performed by searching databases including AYUSH research portal, Google scholar, Pub Med, additional records identified through other sources like DHARA and Research Gate. Data were extracted and analyzed for fulfillment of inclusion criteria. Study showed more than 50% investigations on antimicrobial potential, amongst them many of reported wound healing property additionally. Panchavalkala is a traditional Ayurvedic formulation, exhibited anti-inflammatory, antioxidant and anti-microbial actions. Various forms of Panchavalkala, such as decoction, Taila, Ghrita and cream, etc. have been reported with their unique therapeutic potency in recent year.*

***Keywords:*** *Ayurveda, Panchavalkala, Antimicrobial, Dravyaguna*

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## INTRODUCTION

*Panchavalkala*, a formulation described in ancient text of Ayurveda is composed of the barks of five distinct trees: *Vata (Ficus benghalensis), Udumbara (Ficus racemosa), Ashvattha (Ficus religiosa), Parisha (Thespesia populnea)* and *Plaksha (Ficus lacor)*. These trees are collectively known for their potent therapeutic properties, which synergize to create a powerful healing formulation [1-3]. From the *Dravyaguna* perspective, each constituent of *Panchavalkala* contributes uniquely to its overall efficacy, since each ingredients offers unique Ayurvedic properties as depicted in **Table 1**.

**Table 1: Properties of constituents of *Panchavalkala* as per *Dravyaguna* perspective:**

| Ingredients of *Panchavalkala* | *Rasa* | *Guna* | *Virya* | *Vipaka* | *Prabhava* |
|---|---|---|---|---|---|
| *Vata* | *Kashaya (astringent)* | *Guru (heavy), Ruksha (dry)* | *Shita (cold)* | *Katu (pungent)* | Promotes wound healing and skin regeneration. |
| *Udumbara* | *Kashaya (astringent), Madhura (sweet)* | *Guru (heavy), Snigdha (unctuous)* | *Shita (cold)* | *Madhura (sweet)* | Anti-inflammatory and antimicrobial properties. |
| *Ashvattha* | *Kashaya (astringent), Tikta (bitter)* | *Laghu (light), Ruksha (dry)* | *Shita (cold)* | *Katu (pungent)* | Effective in reducing inflammation and promoting tissue repair. |
| *Parisha* | *Kashaya (astringent)* | *Laghu (light), Ruksha (dry)* | *Ushna (hot)* | *Katu (pungent)* | Antibacterial and wound-healing properties. |
| *Plaksha* | *Kashaya (astringent)* | *Guru (heavy), Snigdha (unctuous)* | *Shita (cold)* | *Katu (pungent)* | Enhances wound contraction and tissue regeneration. |

*Panchavalkala's* multifaceted action includes anti-inflammatory, antioxidant and antibacterial effects, etc. *Panchavalkala's* diverse formulations included decoctions, ointments, *Taila, Ghrita* and *Ghanasatwa*, etc.

The chief ingredients of *Panchavalkala* offer therapeutic potency by virtue of their *Rasa, Guna, Virya* and *Vipaka* [4-7].

The goal of this systematic review was to combine previous studies to provide comprehensive information about *Panchavalkala's* therapeutic applications.

*METHODS*

- ✓ **Databases:** This study performed *via* looking through information bases including AYUSH research portal, Google scholar, Pub Med, extra records distinguished through different sources like DHARA and Research Gate. The inclusion criteria were met by extracting and analyzing the data.
- ✓ **Search Terms***:* The search terms used included *Panchavalkala*, Ayurveda, Therapeutic, and *Dravyaguna*, etc.

**Eligibility Criteria**

Studies retrieved from the databases were exported after removing duplicates. Titles and abstracts were screened, followed by a full-text review [8]. The following inclusion and exclusion criteria were applied

**Inclusion Criteria**

- Articles published recently.
- Studies published in English language.
- Studies reported therapeutic application of *Panchavalkala.*

**Exclusion Criteria**

- Studies not met the above criteria.
- Studies published in languages other than English
- Articles published with inaccessible full texts
- Reviews and editorials articles with no significant data
- Studies not focusing on therapeutic potential of *Panchavalkala.*

The PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) flow chart was used to select articles as mentioned in **Figure 1.**

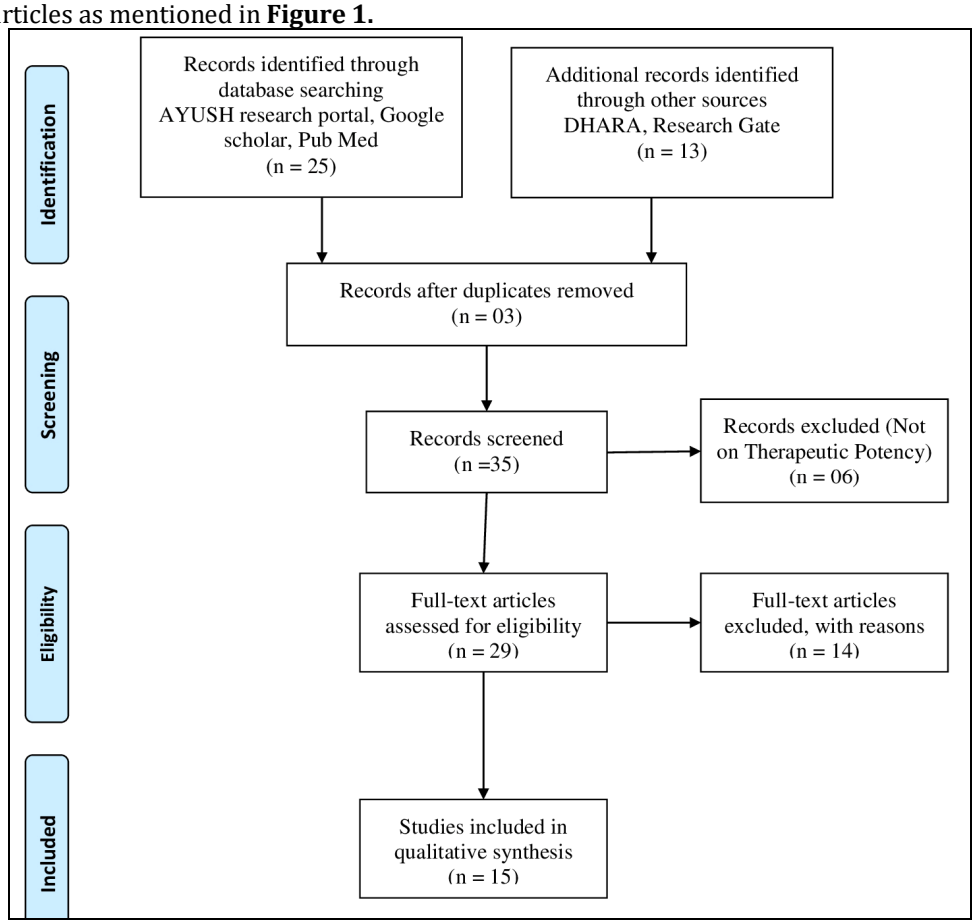


**Figure 1: PRISMA flow chart for selection of studies**

**Data Extraction**

The study year, design of study, sample size, participant and reporting of therapeutic uses of *Panchavalkala*, etc. were all taken into consideration throughout the extraction procedure.

*QUALITY ASSESSMENTS*

The instrument intended for prevalence studies was used to evaluate the study's quality. Reviewer evaluated articles critically; differences about which research should be included or excluded were settled through discussion with the expert of field. This systematic review selected studies with significant data that were published in reputable journals [9].

## RESULT AND DISCUSSION

Present study reported a systemic review on therapeutic application of *Panchavalkala*, in this regard several earlier published studies were scrutinized and significant studies were included to generate qualitative data as mentioned in **Table 2**. As mentioned in Table 2 most of the reported work confirmed antimicrobial, wound healing and anti-inflammatory activities of *Panchavalkala*, some studies also reported role of *Panchavalkala* in gynecological disorders.

### *Antimicrobial Activity*

The antimicrobial activity of *Panchavalkala* was compared to standard antibiotics in many studies. *Panchavalkala* was reported more effective against *Staphylococcus aureus* and *Escherichia coli*. Phytochemical analysis of *Panchavalkala* identified phytosterols, tannins and glycosides. Tannins demonstrated superior antimicrobial activity compared to glycosides and phytosterols in many studies.

### *Wound Healing Activity*

Studies performed to evaluate efficacy of *Panchavalkala Siddha Shatadhauta Ghrita*, *Panchavalkala Kwath* and *Panchavalkala Ghanasatva*, etc. studies confirmed significant wound healing potential of *Panchavalkala*. *Panchavalkala Kwath* exhibited *Shothahara* and *Ropana* properties without adverse effects. *Panchavalkala* application also reduced pain and discharge, and showed cleansing as well as healing effects on chronic ulcers. The aqueous extract of *Panchavalkala Ghanasatva* demonstrated antimicrobial action more effective than classically prepared *Panchavalkala Kwath*.

### *Role in Gynecological Disorders*

*Panchavalkala* plays a significant role in providing anti-inflammatory and healing effects in cases of cervicitis or cervical erosions. *Panchavalkala Varti* also showed significant results in alleviating symptoms like *Kandu, Yoni Srava, Daha, Daurrangandha* and *Pichchilata,* etc. The reported investigations also concluded that *Panchavalkala* play an important role in managing uncomplicated leukorrhea.

### *Antiinflammatory Property*

The various studies concluded that phytochemical components such as tannins, anthraquinones, and phytosterols exhibited astringent and anti-inflammatory properties, which reduce pain, discharge, redness, and swelling, thereby promoting quicker epithelialization. Additionally, the study demonstrated that *Panchavalkala* possesses *Shodhana*, antibacterial and anti-inflammatory properties which support significantly in wound healing associated with inflammatory symptoms.

**Table 1: Details of studies included in the systematic review**

| Authors | Year | Study Design | Finding of Study | References |
|---|---|---|---|---|
| Khadkutkar D, Kanthi V, Dudhamal T | 2016 | *In Vitro* Study | *Panchavalkala* was found to be more sensitive for gram positive bacteria i.e. *S.aurues* than gram negative bacteria *E.col* | 10 |
| Ranjan R, Kumar P, Goswami AB | 2017 | *In Vitro* Study | Study reported significant anti-bacterial as well as anti-fungal potential against *Escheria coli* and *Candida albicans* respectively | 11 |
| Patenkar G, Grampurohit ND | 1999 | *In Vitro* Study | The study concluded that tannins exhibited stronger antimicrobial activity compared to glycosides and phytosterols | 12 |
| Kamabale M, Ashar S, Jadhav S | 2012 | *In Vitro* Study | The results suggested that Panchavalkala could be a potential source of antimicrobial agents for controlling MRSA wound infections | 13 |
| Sakitha KS, Dighe D, Santosh B, et al. | 2013 | *In Vitro* Study | Screening of wound healing activity demonstrated that Panchavalkala ointment enhanced the wound healing process. | 14 |
| Suraj, Khandare et al. | 2019 | Clinical Study | Research has confirmed that Panchavalkala exhibits significant wound healing potential by virtue of its antimicrobial property | 15 |
| Arawatti, S., Boppareddy, S., Narinder, S., et al. | 2012 | Clinical study | Research concluded that Panchavalkala Kwath demonstrated Shothahara (anti-inflammatory) and Ropana (healing) properties in the treatment of Bhagandara Vrana | 16 |

| | | | | |
|---|---|---|---|---|
| | | | (fistula-in-ano) without causing adverse effects | |
| Bhardwaj, U., Sahu, M. | 2010 | Clinical study | It was found that Panchavalkala application reduces pain and discharge while also providing Shodhana and Ropan benefits for chronic ulcers. Study confirmed strong antimicrobial action of aqueous extract of Panchavalkala Ghanasatva | 17 |
| Bhatt, K. S., Vishwesh, B. N., Sahu, M., et al. | 2014 | Clinical study | The study concluded that Panchavalkala cream efficiently decreases the microbial load, clinically controls infection, hastens wound debridement, and can be recommended for the management of chronic non-healing wounds. | 18 |
| Dadlani Bharti | 2003 | Clinical Study | Study suggests that Panchavalkala plays a significant role in providing anti-inflammatory and healing effects in cases of cervicitis or cervical erosions | 19 |
| Verma P, Donga SB, Dei LP et al. | 2011 | Clinical Study | Panchavalkala Varti showed significant results in alleviating symptoms such as yoni srava, kandu, daha, pichchilata, vedana, and daurrangandha, demonstrating its anti-inflammatory properties when compared between both groups. | 20 |
| Joshi J, Bhatt R, Rege V, et al. | 2004 | Clinical Study | Based on these investigations, the study concluded that Panchavalkala douches play an important role in managing uncomplicated leukorrhea. | 21 |
| Anandjiwala S, Bagul MS, Parabia M, Rajrani M | 2008 | *In Vitro* Study | The experiment showed that *Panchavalkala* and its components exhibited significant free radical scavenging activity, which can be attributed to tannins, phenolics, and other compounds. This free radical scavenging activity is likely one of the mechanisms behind *Panchavalkala's* actions, including its anti-inflammatory properties | 22 |
| Verma PS, Harisha CR, Donga SB, et al. | 2013 | Qualitative investigation | The study concluded that phytochemical components such as tannins, anthraquinones, and phytosterols exhibited astringent and anti-inflammatory properties, which reduce pain, discharge, redness, and swelling, thereby promoting quicker epithelialization. | 23 |
| PG dissertation, D.G.M.AM.C & H, Gadag | 2010 | Clinical Study | This study showed encouraging results and concluded that *Panchavalkala* possesses *Shodhana,* antibacterial as well as anti-inflammatory properties | 24 |

*Panchavalkala* contains tannins, glycosides and phytosterols, etc. these constituents contributed significantly towards the *Shothahara* and *Ropana* properties of *Panchavalkala*. *Shothahara* and *Ropana* properties of *Panchavalkala* further facilitate process of wound healing. Additionally, epithelialization promoted by *Panchavalkala* fastens recovery from chronic wound and anti-inflammatory activity reduces symptoms such as pain and burning sensation [25, 26].

## CONCLUSION

This systematic review aims to present qualitative data on therapeutic importance of *Panchavalkala.* Various studies published indicating therapeutic values of *Panchavalkala* were considered for this systemic analysis. This review concluded that *Panchavalkala* offers antimicrobial, anti-inflammatory and wound healing properties. However wound healing action is mainly reported by many researchers and this effect of *Panchavalkala* can be attributed to its *Shothahara* and *Ropana* properties.

## FUNDING

This work was not funded by any organization or individual.

## LIMITATIONS

Study title limited to the qualitative data which can be considered valuable for highlighting major therapeutic application of *Panchavalkala.* However, it is suggested to perform further studies on any one activity of *Panchavalkala* representing quantitative systemic evaluation for ensuring key factors associated with particular biological activity of *Panchavalkala.*

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