

Formulations of *Panchavalkala* As *Vrana Shodhana* and *Vrana Ropana*: A Brief Review

Vaikhari A Dhurve¹, TS Dudhamal²

Author Affiliation: ¹Ph. D Scholar, ²Associate Professor & I/C HOD, Department of Shalya Tantra, Institute for Postgraduate Teaching & Research in Ayurveda, Jamnagar, Gujarat 361008, India.

Corresponding Author: TS Dudhamal, Associate Professor & I/C HOD, Department of Shalya Tantra, Institute for Postgraduate Teaching & Research in Ayurveda, Jamnagar, Gujarat 361008, India.

E-mail: drtsdudhamal@gmail.com

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Abstract

Panchavalkala is one of the combination of barks of five medicinal plants, namely Vata (*Ficus bengalensis*), Udumbara (*Ficus racemosa* Linn.), Ashwatha (*Ficus relogosa* Linn.), Parish (*Thespia populnea*) and Plaksha (*Ficus lacor*) is one of the important Poly herbal drug formulation used by Ayurvedic *Vaidyas* since ancient days. *Panchavalkala* has astringent in taste and shows antiinflammatory, immunomodulatory, antioxidant, antibacterial property which are useful for *Vrana-Shodhana* (cleaning), *Vrana-ropan* (wound healing), non-healing ulcer and gynecological disorders too. Some research study published with encouraging result in the management of various disorders as clinical evidences. So the present article includes review of different studies carried out on *Panchavalkala* starting from in-vitro to clinical.

Keywords: *Panchavalkala*; *Shodhana*; *Ropan*; Wounds.

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Introduction

Ayurveda is holistic science of life gaining popularity worldwide. Now-a-days, Ayurveda started to become a mainstream healthcare system. It has a rich of herbal and Herbo-mineral drugs. Modern medicine is giving relief in a lot of disease but it has costly as well as some sort of side effect. So people aware and turn towards ayurvedic drugs especially herbal preparations. There are many popular herbal medicine described in Ayurvedic text and their demand is increased among not only in Ayurvedic doctor but also in common people. *Panchavalkala* trees are called *Panchksheeri-vriksha* having group of barks of five latex producing trees. Sushruta the father of surgery has categorized drug with their application in many surgical diseases. Sushruta has computed a group of about 100 drugs not only to the management of wound but also described plenty of drugs for wound healing

in *vrnachikitsa adhyaya*. All drugs of these groups' drugs are better for wound healing due to *Kashaya rasa* in which *Panchavalkala* is one of them.¹

Panchavalkala has ayurvedic property in term of *Rasa*, *Guna*, *Veerya*, and *Vipaka*. *Panchavalkala* is used orally in the form of *Kashaya*, *Kwath*, *Rasakriya* as well as locally *Kalka*, *Tail* and *Ghrita*. It has *Vrana Nashak*, *Yonidoshahar*, *Varnya*, *Stanya*, *Visarpa Nashak*, *Dahahar*.² The aim of present study is to review and summarized various *in-vitro* studies, pre-clinical, clinical and other studies that are published online in public domain on *panchavalkal*.

Materials and Methods

The various research engines were searched by using keyword *Panchavalkal*, *Panchavalkala*, *Panchavalkalas*, *Panchavalkal*; i.e. DHARA, Ayush research portal, Google scholar, Research Gate.

The PubMed indexed Ayurved journals, i.e. AYU, ASL and JAIM were also searched. The observed results in the form of number of published articles on *Panchavalkala* are summarized in Table 1.

Results and Discussion

Table 1: Panchavalkal: Research articles online

Sr. no	Journal/Ayurved research database	No of published articles
1	AYUSH research portal	13
2	Google scholar,	11
3	DHARA	02
4	Research Gate	08
5	AYU	05
6	ASL	05
7	JAIM	01

Wound Healing Activity

In Vitro Study on *Panchavalkala*

Antimicrobial activity of *Panchavalkala* powder and ointment were compare with standard antibiotics (Chloramphenicol and Ciprofloxacin) carried out and shows that *Panchavalkala* ointment and powder has less antimicrobial activity in comparison to standard antibiotics, but *Panchavalkala* ointment is more effective than *Panchavalkala* powder. Ointment is sensitive against *Staphylococcus aureus* and *Escherichia coli*. More sensitive for gram positive bacteria i.e. *S.aures* than gram negative bacteria *E.coli*.³

A Study carried out on antimicrobial activity (In vitro) to compare, explore and evaluate the poly herbal combination *Panchavalkala* (A) and *Panchavalkala* (B) which contain Shirish (*Albizia lebbek Benth*) and *Vetas* (*Salix caprea Linn.*) as a substitute of Udumbara and parish in (A) group. These two groups were assessed for their antimicrobial activity against *Candida albicans*, *Escheria coli* and *Staphylococcus aureus* using three dilution of methanolic extract formulation. Standard drug used were Gentamicin (antibacterial) and Grasioufulvin (antifungal). Antimicrobial activity against *E.coli*, *S.aureus* found significant result when compare both groups with standard drug.⁴

Antimicrobial study against *Staphylococcus aureus* (gram positive), *Escherichia coli* and *Pseudomonas Aeruginosa* (gram negative), *Candida albicans* fungi was carried out to evaluate the efficacy of extract *Panchavalkala* as skin disinfectant. These four organisms are mostly present on skin surface. To study the antimicrobial activities of test

drug Kirby-Bauer diffusion method was deputed. After 24 hours of incubation at 37°C plates were observed for the zone of inhibition (mm). The study inference that extract of *Panchavalkala* showed more antimicrobial activity than individual ingredients of *Panchavalkala*.⁵

The phytoconstituents were extracted and detected from *Panchavalkala* by many qualitative chemical tests. The phytoconstituents which was found to contain phytosterols, tannins and glycosides. These phytoconstituents were isolated by chemical methods and then tested for antimicrobial activity against gram positive, gram-negative and fungal culture. Tannins compared with glycosides and phytosterols. The study concluded that tannin had good antimicrobial activity in comparison with glycosides and phytosterols.⁶

The study was planned to screen the alcoholic extract of *Panchavalkala* for *in vitro* antibacterial activity against MRSA. (Clinical isolates reported to be resistant to Gentamicin, Norfloxacin, Penicillin G, Benzyl Penicillin and Cefotaxime: susceptible to Clindamycine). The powder was evaluated and alcoholic extract prepared by Soxhelt extraction. For the antimicrobial activity stranded extract was evaluated. A number of gels proposed to be used locally in wound infections and best was evaluated for antimicrobial activity against MRSA using cup plate (ager well-diffusion) technique. The result concluded that *Panchavalkala* could represent a source of antimicrobial agents to control the MRSA wound infections.⁷

The purpose of the present study was to prepare an Ayurvedic ointment comprising of *Panchavalkala* and *Triphala* and to evaluate the anti-bacterial activity and to screen its wound healing property. In this study Antibacterial activity of the trial drug was evaluated in the specified organisms like *Escherichia coli*, *Staphylococcus aureus* and *Streptococcus pyogenes*. The antibacterial activity of trial drug was performed by agar diffusion method. The response of trial drug was compared and measured with Streptomycin. Screening of wound healing activity showed that *Panchavalkala* ointment enhanced the process of wound healing.⁸

Animal Study

The animal experimentations were carried out on excision wound healing activity of the test formulations the difference of which was statically insignificant.

Clinical study of *Panchavalkala* on wound healing.

A Randomized clinical trial on 43 patients were conducted and categorized into Group A treated with *Panchavalkala Siddha Shatadhauta Ghrita*, Group B treated with *Shatadhauta Ghrita* and Group C treated with Povidone Ointment and the percentage cured was 92.86%, 71.42% and 40% in respective group. Study concluded that the *Panchavalkala* has definite potential in wound healing.⁹

In this study, total 90 patients suffering from Bhagandara vrana were selected and divided into 3 groups which are *Nishadya Tail* (I), *Panchavalkala Kwath* combined with *NishadyaTail* (II) and *Panchavalkala Kwath* (III). The percentage of wound healing was in I group 76.14%, II group 70.62% and III group 82.96%. Study concluded that *Panchavalkala Kwath* had *Shothahara* and *Ropana* Properties in *Bhagandara Vrana* without adverse effect.¹⁰

In this study 25% aqueous extraction group A ($n = 15$) was compared with collagens enzyme and chlorine water group B ($n = 15$) as local application for Wound healing activity. The sign and symptoms were assessed fortnightly up to 60 days. It was found that *Panchavalkala* application reduces pain and discharge along with *Shodhana* and *Ropan Karma* of chronic ulcers. Study concluded that classical prepared *Panchavalkala Kwath* has less effective but 25% aqueous extract of *Panchavalkala Ghanasatva* has shown well antimicrobial action.¹¹

A study was planned for the efficacy of *Panchavalkala* cream in *Vrana shodhana* w.s.r to its action on microbial load and wound infection. *Panchavalkala* cream was locally applied on the wound for the dressing once daily until complete debridement. The study concluded that *Panchavalkala* cream efficiently decreases the microbial load, clinically controls infection, hastens wound debridement and can be recommended in the management of chronic non healing wounds.¹²

Ayurveda utilizes so many plants for well being of human being. Among these plants Triphala is best having properties of *Kashaya*, *Virechak*, and *Vranashodhana*. Like *Trikatu*, *Panchapallav*, *Panchavalkala* and *Dashmula*. Medicinal plants that described in Ayurvedic text are very useful in variety of disease. *Panchavalkala* is one of them used in different forms in *Vranashodhana* and *Vranaropan*.¹³

Clinical Study of *Panchavalkala* in Gynecological Disorders

Patients of chronic cervicitis with erosion were divided into 3 groups. In group A ($n = 10$) treated

with vaginal douche made by *Panchavalkala Kwath* prepared with 200 gm kwath churna and mixed with 8 gm *Sphatika*. In Group B ($n = 16$) patients treated with 10 ml *Kasisadi tail pichu* twice daily. In Group C ($n = 10$) treated with both vaginal douche and *pichu*. The treatment started after 6th day of menstrual cycle up to 45 days. The symptomatic relief was 52.72% in Group A, 67.43% in Group B and 75% in Group C. Study concluded that *Panchavalkala* douche along with *Kasisadi tail pichu* had more effective. Hence from this study it can be said that there is definite role of *Panchavalkala* as an antiinflammatory and healing action in cervicitis or cervical erosions.¹⁴

Panchavalkaladi Varti tried in the management of *Upapluta Yonivyapad* (Valvoviginitis) which is most common condition of bacterial, fungal and infection seen during pregnancy. In this clinical trial patient of first trimester with age between 19 and 40 years who diagnosed as a Valvoviginitis were included and divided into two groups. Group A ($n = 25$) with *Panchavalkaladi Varti* and in Group B ($n = 25$) with *Trida Varti* (clotrimazole 200 mg, Tinidazole 500 mg, Lactic acid bacillus 150 mg) were inserted in the birth canal for 15 days. *Panchavalkaladi Varti* show significant result in symptoms while both group compare, relief of symptoms like *yoni srava*, *kandu*, *daha*, *pichchilata*, *vedana* and *daurrangandha* and proves its antiinflammatory property.¹⁵

Forty two patients of leukorrhea treated with *Panchavalkala* douche in the management of uncomplicated leukorrhea. Cytology, vaginal pH and colposcopy taken as parameter for clinical assessment. *Panchavalkala* douches used for 14 days showed symptomatic relief in 15.7% of uncomplicated leukorrhea ($p < 0.001$). For confirming its antiinflammatory and antimicrobial effects cervical cytology, vaginal pH and colposcopy were utilized. On the basis of these investigations study concluded that *Panchavalkala* douches pay important role in the management of uncomplicated leukorrhea.¹⁶

Women suffering from puerperal sepsis, cervical erosion and vaginal infection are very common disease condition. For this condition various vaginal douches are recommended and traditionally practiced. From these several douches *Panchavalkala* douche has been studied, in the group of leukorrhea and showed significant symptomatic relief.¹⁷

The composition Capsule Pentaphyte-P-5 is *Panchavalkala* extract from barks of five plants *Ficus bengalensis*, *Ficus religiosa*, *Ficus glomerata*, *Ficus Infectora* and *Albizia Lebbeck*. (Formulated by Dr.

Palep's Medical Research Foundation). Patients were taken capsule Pentaphyte P-5 one four time a day three days prior to surgery. Same dose from second postoperative day and continue up to the time of discharge from hospital. No antibiotics were given on the day of surgery. The result of treatment compared with three different groups i.e. one group receiving no antibiotics at all, second group receiving the antibiotics with pentaphyte-P-5b and third group receiving the routine antibiotics (Ampicillin or Ciprofloxacin with metronidazole and Gentamicin). The postoperative results of study group were evaluated. These were compared with similar studies conducted for use of Ciprofloxacin and Augmentine for prophylaxis in major gynecological surgeries. So *Panchavalkala* capsule can be recommended as a wide spectrum prophylactic antimicrobial agent. It is cheap and raw materials are available easily. It has no side effect or GIT irritation.¹⁸

Other study on *Panchavalkala*

Antiinflammatory property

Free radical scavenging activity of *Panchavalkala* and its individual components contain high amount of tannins and phenolics in all the samples. Subsequent quantification revealed that the total phenolics content ranged from 3.5 to 10.8% w/w and total tannin content ranged from 1.6 to 7% w/w in the samples. The presence of high amount of phenolics and tannins and the above reasons prompted to study the free radical scavenging activity of *Panchavalkala* and its components which were evaluated *in vitro* models. From the above experiments it is clear that *Panchavalkala* and its component showed good free radical scavenging activity which can be attributed to tannins and phenolics along with other compounds. Free radical scavenging activity could be one of the mechanisms of action of *Panchavalkala*, including its antiinflammatory activity.¹⁹

The study was carried out to standardized (Pharmacological and Phytochemical) of *Panchavalkaladi* Varti. For various groups Qualitative test revealed the presence of tannin, alkaloids, flavonoids, saponin glycosides; steroids, reducing sugars and volatile oil. The study concluded that the phytochemical components like tannins, anthraquinones, and phytosterols all are astringents and antiinflammatory action thus reduced the pain, discharge, redness swelling, leading to quicker epithelialization. It is indicated

that the formulation meets minimum qualitative standards as prescribed by API at preliminary level. In further research undertaking of its kind can be used the result of this study as reference standard.²⁰

The study was planned with aim to evaluate the efficacy of *Panchavalkala Lepa* along with *Panchavalkala Kashaya* orally in *Mukhadushika*. Total 30 patients were selected and divided into two groups. In Group A *Panchavalkala Lepa* applied locally once a day and In Group B *Panchavalkala Lepa* along with *Panchavalkala Kashaya* 20 ml orally twice daily treatment duration was up to 30 days. This study showed encouraging results are observed and concluded that *Panchavalkala* had *Shodhana* and antibacterial properties.²¹

They has studied for their shelf life and wound healing activity. Shelf life of *Panchavalkala Siddha Shatadhauta Ghrita* was to be 6 month and *Shatadhauta Ghrita* was observed to be 9-month respectively.

Panchavalkala as Antiseptic Gel

The aim of present study was an attempt to convert Ayurvedic Formulation (*Panchavalkala Kwath*) into a ready to use antiseptic gel, which can be used as hand wash. The study was planned to prepare an Ayurvedic hand sanitizers incorporating *Panchavalkala* to evaluate their respective antimicrobial activities. The study concluded that the gel hand wash of *Panchavalkala* has antibacterial activity particularly against *B. pumillus* and *S. aureus* at minimum concentration of 400 µg/ml. The significance was found to be more in comparison to standard reference drug i.e. Ampicillin. Gel hand wash showed encouraging results in culture sensitivity.²²

A Physico-chemical Study

The aim of study was to prepare herbal wound healing gel from *Panchavalkala* barks, *Nimba bark* (*Azadirachta indica A. juss*) and *Kumari* leaves (*Aloe Vera Linn*). To develop the SMP, total five batches were prepared after preparing many trial and errors. *Panchavalkala* gel were compared for physicochemical parameters, i.e. loss on drying (between 94 and 95), pH (between 6 and 7), water soluble extract value (between 5 and 6), alcohol soluble extract value (between 4 and 5). Qualitative test shows presence of tannin, phenols and saponin in Gel. HPTLC profile shows some comparable picks among in process and Gel sample indicate presence of some similar compound.²³

Conclusion

After reviewing various article results are very encouraging having potential therapeutic effects. According to *Rasa- Kashaya, guna-Laghu, ruksha, Karma-Tridoshagna, pancavalkala have properties like Varnya, Yonidoshahara, Vranashodhana, Vranaropana. Visrpahara, Rakta shodhak Raktapittahara. Panchavalkala* contain tanin, Flavonides which are responsible for antiinflammatory, wound healing, antiseptic, immunomodulatory, antioxidant property.

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