

REVIEW OF MODIFIED PANCHVALKAL EXTRACT WITH SPECIAL REFERENCE
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ABSTRACT

Leucorrhoea is a common symptom in all gynaecological infection like RTI, STI, cervical cancer, vaginitis etc. Gynaecological disorder was described in *Ayurvedic* text as *Yonivyapat*. In every year it is estimated that as many as 340 million new cases of curable STD other than HIV/AIDS occurs globally and the greatest impact of RTI/STI is on women and children. Cervical cancer is the second most leading cause of death in cancer among Indian women. PVK is the well accepted combination used for the gynaecological disease from ancient time, even the aqueous extract of PV was found having anticancer properties on cancer cell of cervical cancer.

KEYWORDS: RTI, STI, PVK.

INTRODUCTION

Panchavalkal is the combination of 5 plants of ficus family namely *Vata* (*Ficus bengalensis*), *Udumbar* (*Ficus glomerata*), *Plaksha* (*Ficus infectoria/lacer*), *Ashwatha* (*Ficus religiosa*) and *Parisha* (*Thespesia populnea*) which is used widely in women disease like leucorrhoea, cervicitis, vaginitis, endometriosis etc.^[1]

In *Ayurveda* sometimes substitute plants are indicated if the plant is not available in the particular region or if the substitute have the better medicinal properties for the particular disease (*Bhavaprakash*)^[2] As per *Bhavaprakash Nighantu* and *Kayadev Nighantu*, *Parisha* can be substituted as *Shirish* (*Albezzia lebeck Linn*) and as per *Sarangdhar Samhita* as *vetus* (*Calamus rotang*)^[3] Classical *panchavalkal* is the combination *Vata*, *Udumbar*, *Plaksha*, *Ashwatha*, and *Parisha*. But the modified *panchavalkal* contain *Sirish* in place of *Parisha* (study carried out by CCRS). When one alternative is used like *Vetas* or *Sirish* it is called modified *Panchavalkal*. The study was carried out by Bhatt RM et al revealed that modified *Panchavalkal* with *Shirish* had the best antibacterial and antifungal activity.^[4]

Gynaecological problems are described under topic, *Yonivyapat* in *Ayurveda*. The cause of *Yonivyapat* as described in *Charak Samhita chitkisha sthana* 30th chapter as *mithyachara*, *pradusta artava*, *vija dosha* and *daiva*^[5] By this *nidan sevana agnimandya* is the ultimate result. *Agnimandya* leads to *amotpati*. Due to *amotpati doshadusti* occurs by *kapha* with *snigdha* and *picchila guna* with *anubandha* of *vata* by *chala guna* and *pitta* by

drava, *visra* and *sara guna*. Then dissemination of *doshas* occurs in whole body through *sira* and *srotas*. *Doshas* enter to *yonis* and *garbhashaya* by driving force of *apanvayu*. Where *sthanashamshraya* of *doshas* occur in *yonis* and *garbhashaya* lead to *garbhashaya avum yonis dusti*. *Dushita yonis* by vitiation of *doshas* influenced by *sthanika* etiological factor leads to *yonis srava*^[6]. All the *dravya* in PV and modified PV are *kashaya rasa*, *sita guna* predominance, that pacified the excessive *srava* of *yonis*^[7] The anti inflammatory, antibacterial and anti fungal properties of modified PV reviewed from different scientific studies are given below.

VATA (*Ficus benghalensis*)

Anti inflammatory Activity: Carrageenan induced paw edema in rats had reduced considerable by ethanolic (300mg/kg) and petroleum ether extracts (600mg/kg) of *Ficus benghalensis*. It showed a greater anti inflammatory activities compared with the standard drug indomethacin. The ethanolic extract exhibited more significant in charcoal meal test in rat^[8]

In another study the methanolic extract of *F. benghalensis* (MEFB) inhibited the carrageenan induced edema. Anti inflammatory activity of MEFB is due to its multiple effects on mediators of inflammation, like by inhibiting the synthesis and release of prostaglandins, proteases and lysosomal enzyme^[9]

Antibacterial activity: The methanolic extract of flavonoid found to be significantly low for all five bacterial strains (Manimozhi et al,2012).

In another study the ethanolic extract showed considerable antibacterial activity against *Pseudomonas aeruginosa*, *Proteus mirabilis* and *Bacillus cereus*^[10]

Antifungal activity: By agar diffusion technique Anti fungal activity of aqueous extracts of the stem bark, leaf and root was evaluated. The dose level of extract 30mg/ml, using nystatin (30mg/ml) as reference standard. Stem bark extract showed antifungal activity against *Trichophyton rubrum* and *Candida albicans* comparable to that of nystatin^[11] The phytochemicals present in *F.bengalensis* have different type of pharmacological action which is given below.

Tannin:- The antimicrobial activities of tannins are well documented. The growth of many fungi, yeast, bacteria, virus were inhibiting by tannin^[12]

Rutin:- Rutin is also known as vitamin-P enhance the action of vitamin-C. It used to treat inflammatory condition^[13]

Friedelin:- It shows anti inflammatory activity^[14]

Leucoanthocyanin:-It is also shows anti inflammatory activity^[15]

Ashwattha(*Ficus religiosa* Linn)

Anti inflammatory activity: The methanolic bark extract of *Ficus religiosa* at the dose level of 125mg/kg, 250mg/kg, 500mg/kg administered in carrageenan induced paw edema in animal model had shown significantly reduction in inflammation^[16]

Anti bacterial activity: The aquaous and ethanol extract of bark of *Ficus religiosa* Linn posses inhibitory activity on many bacteria like *Salmonella paratyphi*, *Staphylococcus aureus*, *Shigella dysenteriae*.^[17]

Anti fungal activity: The ethanolic extract of bark of *Ficus religiosa* Linn posses inhibitory activity against many fungus like *Candida albican*, *Aspergillus niger* etc. The phytochemicals present in *F. religiosa* Linn have different type of pharmacological action which is given below.

Tannin:- The antimicrobial activities of tannins are well documented. The growth of many fungi, yeast, bacteria, virus were inhibiting by tannin^[18]

Coumarin:- Coumarin possess a varieties of biological properties, including antimicrobial, anti viral, anti inflammatory^[19]

Udumbar (*Ficus racemosa* Linn/*Ficus glomerata*)

Anti inflammatory activity: Ethanol extract of stem bark of *Ficus racemosa* inhibited COX-1 (The cyclooxygenase isoenzymes, COX-1 and COX-2 catalyze the formation of prostaglandin, thromboxane and levuloglandin) with LC 50 value of 100mg/ml prove that

the drug is used in the treatment of inflammatory condition^[20]

Anti microbial activity: In well diffusion method the ethanolic and ethyl acetate extracts of *Ficus racemosa* showed more promising antimicrobial activity as compared to water, hexane and chloroform extract. The ethyl acetate extract had showed significant bactericidal activity against *E. Coli*, *S.aureus*, *S.typhi*, at concentration 1.32mg/ml, 0.98mg/ml, 1.76mg/ml, 1.52mg/ml respectively and fungistatic against *Aspergillus niger* and *Candida albicans* at concentration 1.39mg/ml and 2.19 mg/ml respectively^[21]

Antifungal activity: *Ficus racemosa* Linn showed potent inhatory activity against six species of fungi like^[22]

1. *Trichophyton mentagrophytes*
2. *Trichophyton rubrum*
3. *Trichophyton soundanese*
4. *Candida albicans*
5. *Candida krusei*
6. *Torulopsis glabra*.

The phytochemicals present in the *F. racemosa* have different type of pharmacological action which is given below.

Stigmasterol:- Stigmasterol have anti inflammatory property.^[23]

Lupeol:- Lupeol has been extensively studied for its inhatory effects on inflammation under in vitro and in animal models of inflammation^[24]

Lupeol acetate:-Lupeol acetate have been reported to have anti inflammatory, anti microbial, anti malarial and anti tuberculosis activity^[25]

Taraxasterol ester:-Taraxasterol have anti microbial, anti allergic, anti oxidative and anti inflammatory activity^[26]

Hentriacontane:- Hentriacontane was shown to ameliorate the expression of inflammatory mediators.^[27]

Plaksha (*Ficus infectoria*/ *Ficus lacer*)

Anti inflammatory activity: Various bark extract of *Ficus lacer* like ethyl acetate, petroleum ether, ethanol and chhloroform extract has significant anti inflammatory activity comparable to standard drug (Indomethacin) using carrageenan and serotonin induced paw edema in animal model.[Sindhu RK and Arora S (2014)].The ethanol extract (100mg) showed significant anti inflammatory activity 75.40, 68.72 and 74.01% with carrageenan serotonin and histamin induced rat paw edema respectively^[28]

The phytochemicals present in the *Ficus lacer* have different type of pharmacological action which is given below.

Lupeol:- Lupeol has been extensively studied for its inhibitory effects on inflammation under in vitro and in animal models of inflammation.^[29]

Stigmasterol:- Stigmasterol have anti inflammatory property.^[30]

Scutellarein:- Scutellarein shows the antiviral activity.**Sorbifolin** also show antiviral activity.^[31]

Shirish (*Albizia lebeck Benth*)

Anti inflammatory activity: (Intradermal injection of 0.1 ml of carrageenan(1% had given in the rat's hind paw which significantly increased the paw) thickness in specified time point. On the other hand, oral pre treatment with *A. Lebeck* stem bark extract at a dose of 120mg/kg significantly decreased rats hind paw edema thickness compared to control group.^[32]

Anti microbial activity: The extract of *A.lebeck* have moderate anti bacterial effect against the gram -ve bacteria.^[33]

Anti fungal activity: The extract of *A.lebeck* have shown moderate anti fungal effect against *Aspragillus niger* and *Candida albicans* in comparison to the standard Amphotericin B.^[34]

The phytochemicals present in the *A. lebeck* have different type of pharmacological action which is given below.

D-catechin:- Anti inflammatory, anti proliferative.^[35]

Albizziahexoside A:- It shows the analgesic effect.^[36]

Anticancer Activity of Aqueous Extract of Pv

The effect of PVAq on the growth kinetic of SiHa and Hela (cell line of cervical cancer) had tested with treatment of different concentrations (0, 20, 40, 80µg/ml) of the extract and grown for 24,48 and 72 h. At the end of each treatment, the cells were stained with trypan blue and the number of viable cells was counted. It was observed that,compared to the control (untreated) cells, PVAq significantly (P< 0.001, n=6) reduced the growth of SiHa and Hela at all the tested concentration.^[37]

DISCUSSION

Leucorrhoea itself not a disease, it is a symptom of pathological or physiological condition. If it is pathological it associated with cervicitis or vaginitis. The organism responsible for vaginal infection and vaginal discharge or leucorrhoea are *Gardnerella vaginalis*, *Candida albican*, *Chlamydia trachomalis*, *Neisseria gonorrhoeae* and *Trichomonas vaginalis*.

Anti-inflammatory properties of *F. benghalensis* had proved by ethanolic, petroleum ether extract and anti-fungal activity (*Candida albican*) by agar diffusion technique of aqueous extract of the stem bark. The

phytochemical Tanin present in *F. benghalensis* resist the growth of many fungi, yeast, bacteria and virus.

The methanolic extract of *F. religiosa* had reduced significantly the paw edema in animal model and the ethanolic extract of bark also have inhibitory activity against fungus like *Candida albican*, *Aspergillus niger*. The phytochemical present in *F.religiosa* Tanin and coumarin possess anti microbial and anti inflammatory properties.

Ethanol extract of *F.racemosa* had shown anti-inflammatory properties by inhibiting COX-1. It also showed anti fungal activity on many fungus like *Candida albican* which responsible for vaginal fungal infection.

Ethyl acetate, petroleum ether, ethanol and chloroform extract of bark of *F.lacor* has significant anti inflammatory activity.The phytochemical present in *F.lacor* lupeol and stigmasterol have significant anti inflammatory properties.

A.Lebbeck stem bark extract had significantly reduced the paw edema of rat. The anti fungal activity of *A. Lebeck* on *Candida albican* was proved which is responsible for fungal infection in RT. The phytochemical D-catechin present in *A. Lebeck* has nanti inflammatory properties. In this way this reviews have proved the effectiveness of modified PV extact on leucorrhoea.

CONCLUSION

By this review it is concluded that due to anti inflammatory, antimicrobial properties of modified PV, it can heal all the pathological condition of RT including Leucorrhoea by local application.

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