



Research article

Vaginitis phyto therapy against vaginal pathogen and molecular identification of isolated vaginal pathogen

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ABSTRACT

Female genital tract infections are major public health problems, with considerable economic consequences. Drugs like metronidazole and clindamycin are unable to control the growth of vaginal infection completely, which requires alternate novel treatment strategies. Some herbal antimicrobial agents are reported to inhibit the growth of vaginal infection. *Boerhaavia diffusa* and *Azadirachta indica* are such herbs with antimicrobial, antioxidant and anti-inflammatory properties. In the present study, vaginal fluid samples from infected patients were collected and cultured using different media. Isolated pathogens were identified using 16S rRNA sequence. Four bacterial pathogens were isolated and identified. The pathogens identified were *Aeromonas cavia*, *Lactobacillus*, *Staphylococcus aureus* and *Klebsiella pneumoniae*. Anti-vaginal activity of the two herbs were analysed in an isolated pathogen. Maximum zone of inhibition was observed against *S. aureus* and *Aeromonas caviae*. The present investigation confirmed that, *Boerhaavia diffusa* and *Azadirachta indica* herbal extracts were able to control the vaginal pathogens without any side-effects

Keywords: Biochemical analysis, Bacterial pathogens, Phytochemicals, 16S rRNA sequence, Vaginitis.

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INTRODUCTION

Vaginal ecosystem contributes various synergistic communications between the host and different microflora colonizing the vaginal mucosa [1]. When the vaginal mucosa colonized more by *Lactobacillus* spp., then it seems to be a healthy vaginal environment, which acts as a defence against vaginal pathogens [2]. These bacteria produce antimicrobial compounds and acts by competition for adherence to the vaginal epithelium. The biosurfactants produced by *Lactobacilli* microbiota will provide a restoration that further displace the pathogenic species [3]. When this beneficial *Lactobacillus* is depleting due to any conditions, it could increase infection and modulate immune responses, favour the growth of pathogens and would ease the development of several diseases [4]. Vaginal inflammation, or vaginitis, is the most frequent gynaecological problem and may be caused by various vaginal microflora, allergies or due to chemicals exposure [5].

Bacterial Vaginosis (BV), the most common reason of vaginitis and Vulvovaginal candidosis (VVC) is the second most common reason of vaginitis. Anaerobic micro-organisms such as *Gardnerella vaginalis*, *Prevotella*, *Peptostreptococcus* and *Bacteroid*

spp. are responsible for bacterial Vaginosis with symptoms of malodorous vaginal discharge or local irritation [6] whereas symptoms of vulvovaginal candidiasis includes pruritus (itching), soreness, irritation, vulvar burning change in vaginal discharge, dyspareunia and cottage cheese-like vaginal discharge [7]. *Trichomonas vaginitis* is a sexually transmitted disease caused by *Trichomonas vaginalis* with symptoms of vaginal discharge green to brown colour, foul odor, edema or erythema and colpitis macularis. Vaginitis has its own serious sequelae [8].

Antibiotics usage for genital infections are less effective with side effects and recurrences. In addition, antibiotics will disturb healthy non-pathogenic microbiota present in vagina [9]. Such condition is the cause for recurrent infection as elimination of the commensal microorganisms may increase the susceptibility to recolonize the resistant pathogens [10]. Alternatively, medicinal plants with unlimited bioactive compounds can be used as antimicrobial agents expecting that plant extracts recognizing target sites are other than those used by antibiotics and will be active against drug-resistant microbial pathogens [11].