

Title: THERAPEUTIC EFFECT OF PROANTHOCYANIDIN POLYMERIC TANNINS FROM STRYPHNODEDRON ADSTRINGENS ON MURINE MODEL OF VAGINAL CANDIDIASIS

Authors: Rossi, D.C.P.¹, Buffoni, L.¹, Kaplum, V.², Mello, J.C.P.², Nakamura, C.V.², Taborda, C.P.¹, Ishida, K.¹

Institution: ¹ USP - Universidade de São Paulo (Av. Prof. Lineu Prestes, 1374 – ICB II Lab 226/247, São Paulo/SP, Brazil, 05508-900); ² UEM - Universidade Estadual de Maringá (Av. Colombo, 5790 - Jardim Universitário, Maringá/PR, Brazil, 87020-900)

Abstract

Stryphnodendron adstringens (Mart.) Coville (Leguminosae) is often used in the Brazilian folk medicine to treat vaginal infections and wounds, and it is also used as astringent, anti-diarrheal, and antimicrobial. *Candida albicans* is the main etiological agent of vaginal candidiasis affecting about 75% of women. In previous studies we showed that fractions rich in proanthocyanidin polymers extracted from *S. adstringens* interfere with the growth, virulence factors and cellular ultrastructure of the *Candida* spp. isolates. Thus, this study aimed to evaluate the effect of a gel formulation containing proanthocyanidin polymers from *S. adstringens* stem bark in a murine model of vaginal candidiasis. Female BALB/c mice (6 to 8 weeks) in estrus period induced by 17- β -estradiol were infected with *C. albicans* (ATCC 10231). After 24 h of infection, the mice were treated with 2% miconazole cream, gel formulation containing 1.25%, 2.5% or 5% of fraction F2 from *S. adstringens*, once daily for 7 days. The mice groups without treatment and treated with gel formulation were included in this study. To estimate the fungal burden in the vaginal tissues, 100 μ l of a homogenate of vagina in PBS was plated onto Sabouraud dextrose agar plates with 50 μ g/ml chloramphenicol. The treatment efficacy was evaluated by colony forming units (CFU) number per gram of vaginal tissue. The treatment with gel formulation containing fraction F2 reduced vaginal fungal burden in 10 to 100 times compared with the untreated group; however, significant differences were observed only in the concentration of 5% fraction F2 ($p < 0.01$). Similar fungal burden reduction was also observed with 2% miconazole ($p < 0.05$). In addition, the gel formulation did not affect the fungal burden of vaginal tissues. The antifungal activity of fraction F2 in the murine model of vaginal candidiasis caused by *C. albicans* can be attributed to the presence of condensed tannins composed by prodelfinidins and prorobinetinidins monomers and gallic acid in the fraction. We conclude that the vaginal gel formulation containing fraction F2 at concentration of 5% from *S. adstringens* could be an alternative in the treatment of vaginal candidiasis.

Keywords: *Stryphnodendron adstringens*, tannins, proanthocyanidin, vaginal candidiasis, *Candida albicans*

Financial support: CAPES, CNPq, FAPESP