TITLE: Antimicrobial and anti-biofilm action of *Pfaffia paniculata* extract against yeasts, aerobic and anaerobic bacteria.

AUTORS: Gimenez MG, Ramos LP, Sper FL, Amendola I, Santos JG, Carvalho CAT, Andrade FB, Oliveira LD

INSTITUTION: 1. Universidade estadual Paulista Júlio de Mesquita Filho (Unesp), Instituto de ciência e Tecnologia Campus de São José dos Campos - Departamento de Biociências e Diagnóstico Bucal; 2. Faculdade de Odontologia de Bauru - USP Universidade de São Paulo.

ABSTRACT

Known as Brazilian ginseng, *Pfaffia paniculata* has anti-inflammatory and antioxidant activity, but there are few studies evaluating its antimicrobial action. The objective was to evaluate the antimicrobial action of *P. paniculata* glycolic extract on plankton cultures and biofilms of aerobic bacteria, anaerobic bacteria and yeasts. ATCC aerobic strains of *Staphylococcus aureus, Staphylococcus epidermidis, Pseudomonas aeruginosa, Streptococcus mutans, Enterococcus faecalis,* anaerobic strains of *Fusobacterium nucleatun, Porphyromonas gingivalis, Porphiromonas endodontalis, Micromonas micra*, *Prevotella intermedia* and yeasts *Candida albicans, C. glabrata, C. dubliniensis, C. tropicalis, C. krusei* and *C. guilhermondii* were employed. Initially a screening was performed with Broth Microdilution test, protocols M7-A9 (aerobic), M11-A8 (anaerobes) and M27-A3 (Yeast) according to CLSI. After, aerobic biofilms were formed in microplates (96 wells) during 48h of incubation at 370C and the anaerobic biofilms during 168 hours of incubation in anaerobic chamber. Treatments were carried for 5 min using 200, 100 and 50 mg/ml by *P. paniculata* extract. The biomass (CV) and MTT tests were used to measure the reductions in aerobic biofilms, while for anaerobic biofilms the CFU/ml count was used. Statistical analysis was performed by ANOVA test complemented by the Tukey test ($p < 0.05\%$). The extract obtained CMM on *P. aeruginosa* and *C. tropicalis* with 50 mg/ml, as well as *S. mutans* and the *Candida* species with 100 mg/ml. The anaerobic strains obtained only MIC with 100 mg/ml extract. The extract showed no action against *S. aureus, S. epidermidis, E faecalis* and *P. intermedia.* The biofilm tests showed reductions for *M. micra* and *P. gingivalis* in 100%, whereas *F. nucleatun* and *P. endodontalis* obtained reductions of 80 and 95% with 200 mg/ml. Aerobic strains of *P. aeruginosa* and *S. mutans*

showed reductions of 78.6 and 20.3%. Candida species obtained reductions of 77.4, 70.1 and 16.9% for *C. albicans, C. glabrata* and *C. krusei,* respectively. The reductions for *C. tropicalis, C. dubliniensis* and *C. guilhermondii* were 61.6, 14.5 and 55.9%. In conclusion, *P. paniculata* extract presented antimicrobial action on *P. aeruginosa, S mutans, M. micra, P. gingivalis, F. nucleatun, P. endodontalis, C. albicans, C. glabrata, C. dubliniensis, C. tropicalis, C. krusei* and *C. guilhermondii.*

Keywords: Anti-Infective Agents; Biofilms; *Amaranthaceae*;

Development Agencies: FAPESP