

TITLE: ANTIMICROBIAL ACTIVITY OF NUDIBRANCH MOLLUSCS EXTRACTS AGAINST CARIOGENIC MICROORGANISMS

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ABSTRACT:

Dental plaque is a microbial multispecies biofilm, that is responsible by the began of periodontal disease, gingival inflammation and dental caries. The spread of antibiotic resistance and the challenges associated with antiseptics such as chlorhexidine have necessitated a search for new antibacterial agents against oral bacterial pathogens. Nudibranch molluscs constitute a group of marine gastropods present in the Brazilian coast extension, these sessile invertebrates possess chemical defense systems and their secondary metabolites might, therefore, be potential nontoxic antifouling agents. The bioactive molecules compounds from Nudibranchs display very interesting pharmacological properties, such as the activation of protein kinase C, induction of morphogenetic effects and growth inhibitory in tumoral cells, but its antimicrobial properties have not yet been evaluated. This study aimed to evaluate the Minimum Inhibitory Concentration (MIC) and Minimum Bactericidal Concentration (MBC) of methanolic and ethanolic extracts of *Tambja stegosauriformis* and *Felimare lajensis* against cariogenic microorganisms: *Streptococcus mutans* ATCC 25175 and *Lactobacillus casei* ATCC 393. Different concentrations of *T. stegosauriformis* (2.35 to 0.0011 mg/mL) and *F. lajensis* (1.65 to 0.0008 mg/mL) extracts were tested. The ethanolic and methanolic extracts were obtained and then pooled together for the evaluation of MIC and MBC. Chlorhexidine (0.05%) was used as positive control and the substances without the inoculum comprised the blank control. The *T. stegosauriformis* extract showed bacteriostatic action against *S. mutans* (MIC = 1.175 mg/mL) and *L. casei* (MIC = 0.5875 mg/mL). *F. lajensis* extract did not show bacteriostatic action against the microorganisms analyzed at the higher concentration evaluated. High concentrations of *T. stegosauriformis* and *F. lajensis* extracts will evaluate against *S. mutans* and *L. casei* and other cariogenic microorganisms. The cytotoxicity assays, *in vitro*, also will be performed. Its results suggest that the *T. stegosauriformis* extract is a suitable candidate for further investigation for the development of new treatment strategies for oral bacterial infections.

Keywords: Nudibranch molluscs, Antibacterial activity, *Streptococcus mutans*, *Lactobacillus casei*

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