

**TITLE:** CHARACTERIZATION OF ARTIFICIAL SALIVA WITH RED PROPOLIS OF ALAGOAS: CITOTOXICITY ON ORAL MUCOSAL EPITHELIAL CELLS AND ANTIMICROBIAL EFFECT ON THE ORAL OPPORTUNISTIC MICROBIOTA FROM PATIENTS WITH HYPOSALIVATION POST-RADIOTHERAPY

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**ABSTRACT:** Radiotherapy for the head and neck cancer treatment can cause hyposalivation, which reduce the patients's quality of life, including difficulties in feeding and alteration of the oral microbiota. Thus, the objectives of this study were: to evaluate the frequencies of *Staphylococcus*, *Streptococcus*, *Enterococcus*, *Lactobacillus* and *Candida* spp. in saliva from 30 post-radiotherapy patients and 20 healthy individuals (control group). In addition, to develop a formulation of artificial saliva with red propolis nanoparticles and to characterize the product for HPLC, for its cytotoxicity on oral mucosal epithelial cells and for the antimicrobial potential against opportunistic pathogens, isolated from saliva of the oncologic patients. Opportunistic microorganisms were quantified by serial dilutions of saliva and culture in the selective media. Isoflavonoids of the red propolis were detected by HPLC. The cytotoxic effect of the saliva with propolis on oral mucosal epithelial cells were tested by MTT [3-(4,5-dimethylthiazol-2-yl)2,5-difeniltetrazolio brometo] test. In addition, a total 87 strains being 14 *Staphylococcus*, 11 *Lactobacillus*, 4 *Streptococcus*, 3 *Enterococcus*, 34 Gram negative bacilli and 21 *Candida* spp., which were isolated from saliva post-radiotherapy patients, were submitted to test of sensitivity to the artificial saliva containing from 15-500 µg/mL of red propolis nanoparticles through serial microdilution technique e spectrophotometry. There was higher frequencies and quantify of opportunist microorganisms in the saliva from post-radiotherapy patients, in relation to the control group (Mann-Whitney, p<5%). Formononetin, liquiritigenin and isoliquiritigenin were detected in the red propolis from Alagoas in higher concentrations. Concentrations of 125-250 µg/mL of propolis extract were effective against 100% of the Gram positive bacteria, 70% of the Gram negative bacteria and 47% of the *Candida* spp. strains tested. Concentrations up to 125 µg/mL of the product did not show significant cytotoxicity. The product showed broad antimicrobial spectrum and relative cytotoxicity, *in vitro*, so the association of both could indicate a potential applicability of saliva with red propolis for the treatment of radiotherapy-induced hyposalivation.

**Key words:** head and neck neoplasms, xerostomia, artificial saliva, microbiota, propolis

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