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# The effect of selected commercially available mouth-rinses vs. curcumin photosensitizers in an artificial mouth model mimicking their use before meals on early colonizers single species biofilm

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## Abstract

**OBJECTIVE:** The aim of the study was to determine the bacterial-adherence to the experimental pellicle pretreated with commercially available oral-rinse/ photosensitizer (mimicking use of oral-rinse/ photosensitizer before meals). **MATERIALS AND METHODS:** An artificial mouth (NAM) system was used for the development of single-species biofilm (*Actinomyces viscosus*, *Streptococcus mitis* and *Streptococcus sanguinis* respectively). Two commercially available oral-rinses containing active ingredients [Essential oils (EO) and Chlorhexidine gluconate (CHX) were used. Curcumin photosensitizer (PS) was used as a photosensitizer against the microbes. For the adherence study, the

experimental pellicle on the beads ( in the capillary tubes of the NAM system) was pretreated with the oral-rinse and photosensitizer before the inoculation of bacteria; this would resemble the use of rinse / photosensitizer before meal. The bacterial population of the biofilm was determined using serial dilution assay and expressed as colony forming unit per ml. Deionized distilled water was used in place of oral-rinse/ photosensitizer and served as a negative-control. For the qualitative study, bacterial population viewing was carried out using Scanning Electron Microscope (SEM). RESULTS: It was observed that on treatment with the oral-rinses the bacterial population of *S.mitis*, *S.sanguinis* and *A.viscosus* (adherence) was significantly reduced where the reduction was less for EO-based oral-rinse compared with that of CHX and curcumin PS in the following sequence EO<CHX<PS (p<0.05). CONCLUSIONS: From the results, it appears that curcumin photosensitizer and oral-rinses contain CHX to be preferably used before-meal and EO after-meal.

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