

# Effect of different plant extracts on the salivary bacteria and oral biofilm – an *ex vivo* and *in situ* study

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**Aim:** To evaluate the antimicrobial effects of various plant extracts on salivary flora and oral biofilms.

**Methods:** The effect of plant extracts (curcuma, liquorice, rosemary, and hops) in various concentrations (0.2 % to 8.3 %) on the salivary flora was tested *ex vivo*. The bacteria from saliva were individually incubated with each extract for 10 min and analyzed using fluorescence microscopy after LIVE/DEAD staining. To investigate the effects of plant extracts on the oral biofilm, dental specimens were mounted on acrylic splints and exposed intraorally for 48 h. The extracts (10 ml of 0.2 % hops or 0.4 % rosemary) were used as mouth rinsing and applied for 30 s each 6 h. Water served as a control. The biofilm samples were analyzed using fluorescence microscopy, scanning and transmission electron microscopy.

**Results:** All *ex vivo* tested plant extracts showed an antibacterial effect at high concentrations. Hops and rosemary showed strong effects also at low concentrations and were therefore tested *in situ*. They induced a significant reduction in bacterial colonization and biofilm vitality. Moreover, the biofilm thickness on dental specimens was significantly reduced *in situ*.

**Conclusions:** The tested plant extracts showed different antimicrobial activity depending on their concentration. Hops or rosemary rinsing induced a significant inhibition of biofilm formation in the oral cavity.