

# EFFECT OF *OCIMUM BASILICUM* OIL EXTRACT ON *STREPTOCOCCUS MUTANS* AND *STREPTOCOCCUS SOBRINUS* BIOFILM FORMATION

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**Abstract.** *Streptococcus mutans* and *Streptococcus sobrinus* are associated with plaque formation and caries development. The aims of this study were to evaluate the ability of the extract of *Ocimum basilicum* oil to inhibit the growth and biofilm formation produced by *Streptococcus mutans* (ATCC 25175) and *Streptococcus sobrinus* (ATCC 6715) and 3 *S. mutans* isolates obtained clinically from Thai children in order to determine its potential usefulness for future clinical studies. Three concentrations of *O. basilicum* extract were used for the study (6%, 8%, and 10%). Bacterial inhibition was tested by an agar inhibition assay. Biofilm inhibition was tested by a biofilm formation assay in a 96-well polystyrene plate. The positive and negative controls were 0.12% chlorhexidine mouthrinse and 95% ethanol, respectively. Oil extract penetration was determined by fluorescent staining and visualization under confocal laser scanning electron microscopy (CLSM). All tested extracts had greater inhibition of tested bacterial isolates than controls. All extract concentrations inhibited biofilm formation of all isolates examined. The CLSM examination of *S. mutans* (ATCC 25175) showed the 6% extract had the greatest biofilm penetration and inhibition, followed by the 8% and 10% concentrations. The CLSM examination of *S. sobrinus* (ATCC 6715) showed the 8% extract had the greatest biofilm penetration and inhibition, followed by the 10% and 6% concentrations. All extract concentrations caused significantly ( $p=0.005$ ) greater inhibition of *S. mutans*, *S. sobrinus* and other tested clinical isolates than the control group. *O. basilicum* essential oil appears to be a good candidate for future clinical studies.

**Keywords:** sweet basil, *S. mutans*, *S. sobrinus*, biofilm, essential oils, confocal laser scanning electron microscopy

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