Analysis of the antibacterial efficacy of *Plantago major* L. extract against *Streptococcus mutans* by microdilution in broth

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ABSTRACT

The present study investigated the efficacy of *Plantago major* L. (Plantaginaceae) extract against *Streptococcus mutans*, a bacterium associated with the development of biofilms and dental caries. The main objective was to determine the efficacy of this extract by means of the broth microdilution method, seeking to establish the Minimum Inhibitory Concentrations (MIC) and Minimum Bactericidal Concentrations (MBC) of the extract. For this, bacterial suspensions were prepared and incubated with different concentrations of the extract in BHI medium. After 48 hours at 36°C, the turbidity of the samples was evaluated, followed by subculture to check for bacterial growth. The extract of *Plantago major* and 1% chlorhexidine were tested, and the MIC of the extract against *S. mutans* at a concentration of 1.5 x 107 CFU/mL was determined at 25 mg/mL. The results indicate that the extract has significant antimicrobial activity against *S. mutans*, suggesting that it is a promising natural alternative for the prevention of dental caries. The comparison with chlorhexidine suggests that the extract may be a viable option, especially considering the growing demand for natural antimicrobial agents. In conclusion, this study confirms the efficacy of *Plantago major extract* against *Streptococcus mutans*, highlighting its potential as a natural antimicrobial agent. Further research is needed to further explore the mechanisms of action and efficacy of this extract in in vivo models, aiming at its development as a treatment for caries prevention.

Keywords: Plantain, Biofilm, Tooth decay.

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