In vitro Antimicrobial Activity of Dandelion Against Orodental Pathogens

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ABSTRACT
Objective: To evaluate the anticariogenic effect of dandelion extract against different oral pathogenic clinical isolates. Methods: In the present study, we evaluated the antimicrobial effect of dandelion against oral pathogens by the minimum inhibitory concentration and minimum bactericidal concentration. Clinical isolates such as Enterococcus faecalis, Streptococcus mutans, Streptococcus salivarius, Lactobacillus acidophilus were used to evaluate the antimicrobial effect of dandelion. Results: In this study, dandelion showed antibacterial activity against most of the oral microbes tested. In particular, dandelion shows high sensitivity against cariogenic microbes such as Enterococcus faecalis and Streptococcus salivarius. Conclusion: Taraxacum officinale suggested as a useful herb in order to control dental caries and endodontic infections. It can be better drug candidates to combine with regular antimicrobial agents. However, further studies are warranted on these lines to explore their exact mechanism of action against oral pathogens.

Keywords: dandelion, Taraxacum officinale, Oral infections, oral pathogens

INTRODUCTION
Oral microbiota is implicated with many systemic diseases, including cancer, diabetes mellitus, rheumatoid arthritis, cardiovascular diseases, and preterm birth. Oral microbiota has also been considered as a potential biomarker of human diseases. Dental plaque is an important etiologic factor in dental caries. Several strains of oral streptococci, lactobacilli are capable of initiating the formation of dental plaque, which plays an important role in the development of dental plaque and caries and also of periodontal disease in humans. Increasing resistance of these microorganisms against present antimicrobial agents and adverse effects of these drugs is of major cause of concern. Therefore, there is a need to develop alternative antimicrobial drugs for the treatment of infections obtained from medicinal plants to counteract the resistance and to minimize the adverse effects. In this connection, several plant derived compounds have been investigated as promising agents to prevent oral diseases, especially plaque-related diseases such as dental caries. Several studies were also reported the antiviral, antibacterial, antifungal, antihelminthic, antimolluscal and anti-inflammatory properties of plants. Taraxacum officinale, known as dandelion, has been used in folk medicine in the treatment of myriad pathological effects. Several flavonoids including caffeic acid, chlorogenic acid, luteolin, and luteolin 7-glucoside have been isolated from the dandelion. In Traditional Chinese medicine, dandelion is also acclaimed as a nontoxic herb with exceptional values for its hepatoprotective, antioxidative, diuretic, anti-rheumatic and anti-inflammatory properties. However, relatively less has been studied regarding the antimicrobial effect of dandelion leaf extract on oral microbiota. Hence, in the present study we evaluated the potential inhibitory effect of dandelion against oral cariogenic bacteria in vitro.

MATERIALS AND METHODS
Extract
The Taraxacum officinale ethanolic leaves extract was obtained from Green Chem. Herbal Extracts and Formulations, Bengaluru as gratis.

Clinical isolates
Enterococcus faecalis, Streptococcus mutans, Streptococcus salivarius, Lactobacillus acidophilus

Determination of Minimal Inhibitory Concentration/minimum bactericidal concentration (MIC/MBC)
Antimicrobial activity determined by the microdilution assay. A volume of 100 μL of 10% BHI medium was added to each well of a 96-good microplate and 100 μL of the test product was used to do a twofold serial dilution giving concentrations of 6, 12, 25, 50, 100, 200, 400 mg/mL. Next, 100 μL of the bacterial suspension was added to all wells except the negative control or blank. The negative control contained 100 μL of 10% BHI medium and 100 μL of test product. Meanwhile, the positive control contained the bacterial or yeast suspension and 10% BHI. The plates were placed in an incubator for 24 h at 37°C. The assays were done in triplicate. MIC was defined as the lowest concentration at which no growth was observed in accordance with NCCLS, 2005.

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has been tested for its antibacterial efficacy against *P. aeruginosa*, *E. coli*, *S. aureus*, *Bacillus Subtilis* and *Micrococcus luteus* Their study indicates the fact that the dandelion can be potential against the above bacterial strains and they suggested that presence of secondary metabolites like alkaloids, tannins, and flavonoids implicated for dandelion antibacterial efficacy. In this study we evaluated dandelion efficacy in oral dental pathogens, the results show growth inhibitory effect of dandelion on oral dental pathogens and our current results are in agreement with this report In conclusion, the present study shows the antimicrobial effect of dandelion against oral dental pathogens. Hence, it is suggested that the antibacterial efficacy of *Taraxacum officinale* ethanolic leaves extract should be watched for its beneficial effects against dental caries However, further studies are warranted on these lines.

### CONFLICT OF INTERESTS
None to declare

### REFERENCES