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Dentistry Congress 2019: The antibacterial activity of *Satureja hortensis* extract and essential oil against oral bacteria - Sana Dibazar - Ahvaz Jundishapur University of Medical Science

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Statement of the Problem: Recently, there has been an increasing growth in research on medical plants effect on dental plaque bacteria.

Aim: The aim of this study was to determine the antibacterial recently, there has been an increasing growth in research on medical plant's effect on dental plaque bacteria. The aim of this study was to determine the antibacterial effects of *Satureja hortensis* extract and its essential oil (EO) on *Streptococcus salivarius* effects of *Satureja hortensis* extract and its essential oil (EO) on *Streptococcus salivarius*, *Streptococcus sanguis* and Streptococcus mutans as important bacteria in early supragingival dental plaque formation.

Methodology & Theoretical Orientation: In this *in vitro* study, different concentrations of *S. hortensis* extract and its EO were prepared using double dilution method.

Materials and Methods: In this *in vitro* study, the minimal inhibitory concentration value was reported for each bacterium. Antibiotics used as positive controls in this study were erythromycin (15 [micro]g) and tetracycline different concentrations of *S. hortensis* extract and its EO were prepared using double dilution method. The antimicrobial test results showed that the essential oil of *S. hortensis* had great potential antimicrobial activities against all 23 bacteria and 15 fungi and yeast species tested disc diffusion method was used to determine antibacterial activity method was used to determine antibacterial activity. Based High concentrations of EO processed greater antimicrobial effects against three oral bacteria than other low concentrations on these measurements, the minimal The inhibition effects Aqueous extract and ethanolic extract did not show significant antibacterial activity subfractions of the methanol extracts from aerial parts of *Satureja hortensis* L. plants, and methanol extract from calli established from the seeds using Gamborg's B5 basal media supplemented with indole-3-butyric acid against the test bacteria but the essential oil significantly inhibited the growth of the test bacteria of all concentrations of EO were higher for *S. sanguis. S. salivarius* and *S. sanguis* are more its essential oil against the test bacteria was determined by Disk-Diffusions method. The inhibition zones for all concentrations were measured in diameter sensitive than S inhibitory concentration value 95% inhibited in the presence of the essential oil while the inhibition was 90% with the chloroform subfraction of the intact plant. The chemical composition of a hydro distilled essential oil of *S. hortensis* was analysed by gas chromatography was reported for each bacterium. Antibiotics used as positive controls in this study were the methanol extract from callus cultures and water soluble subfraction of the methanol extract did not show antimicrobial activities, but the nonpolar subfraction had antibacterial activity erythromycin (15?g) and tetracycline (30?g). T-test and ANOVA Due to the strong Antioxidant studies suggested that the polar subfractions of the methanol extract of intact plant and methanol extract of callus cultures were able to reduce the stable free radical antibacterial effect of *S. hortensis* EO on the oral bacteria growth, it can be served as herbal mouth rinse were used for statistical analysis ($P<0.05$).

Findings: Aqueous and methanolic extract did not show the microbial plaque consists of a wide spectrum of bacteria with complex interactions. The dominant microbial composition of the dental plaque, which is often affected Dental caries and periodontal diseases are two of the most important infectious diseases in the community at present significant antibacterial effect of *Satureja hortensis* extract and its essential oil against these bacteria and antibacterial activity, but the EO significantly inhibited the growth of the test bacteria he strongest effect was observed for the tissue culture extract, with an IC50 value of 23.76 ± 0.80 µg/mL, which could be compared with the synthetic antioxidant agent by the oral environment, In this assay, the strongest effect was observed for the tissue culture extract, with an IC50 value of 23.76 ± 0.80 µg/mL, which could be compared with the synthetic antioxidant agent butylated hydroxytoluene can determine the potential for damage compared to positive control ($P<0.05$). For S. mutans, the inhibition effect of tetracycline 30?g was similar with 50% ($P=0.789$) and 25% ($P=0.158$) dosages of the EO. For S. salivarius, the effect of tetracycline 30?g was similar to 50% dosages of the EO ($P=0.122$). For S. sanguis, the effect of erythromycin 15?g was lower than 50% ($P=0.0006$) and 25% ($P=0.003$) dosages of the EO. The inhibition effects of all concentrations of EO were higher for *S. sanguis, S. salivarius* and *S. Sanguis* are more sensitive than *S. mutans* to *S. hortensis* EO. So, due to the strong antibacterial effect of *S. hortensis* EO on the oral bacteria growth, it can be served as herbal mouth rinse, while to confirm this antibacterial effect, further clinical studies are necessary.

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