

TITLE: Antibacterial activity of *Salvia officinalis* against *Candida* ssp.

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ABSTRACT:

Research on natural products with antimicrobial activity have greatly increased in the last 15 years, especially on Latin America, Europe and Asia. This is a response to the increase of resistant strains to known antimicrobials, and the fact that many of them have harmful side effects. There is a growing need for the discovery of new substances that are effective in the treatment of infections and biofilm formation, with good availability and low cost, such as essential oils and plant extracts. The aim of this study was to determine antibacterial activity of *Salvia officinalis* lyophilized plant extract against 20 bacteria strains through the determination of Minimum Inhibitory Concentration (MIC). The assays were done in triplicate system and according to the Clinical & Laboratory Standards Institute protocol. The plant extract was obtained commercially and tested against the reference strains *Acinetobacter* ATCC 14293, *Bacillus cereus* ATCC 11778, *B. subtilis* ATCC 23859, *Escherichia coli* ATCC 25922, *E. coli* ATCC 35218, *E. coli* 8739, *Enterobacter aerogenes* 13048, *Pseudomonas aeruginosa* ATCC 25619, *P. aeruginosa* ATCC 27853, *Proteus mirabilis* ATCC 25923, *Serratia marcescens* ATCC 8100, *Salmonella* ATCC 14028, *Staphylococcus aureus* ATCC 25923, *S. aureus* ATCC 29213, *S. aureus* ATCC 43300, *S. aureus* MRSA, *S. epidermidis* ATCC 49461, *S. epidermidis* ATCC 12228, *S. epidermidis* ATCC 14990 and *S. saprophyticus* 15305 at serial concentrations between 0,09766 mg/mL and 200 mg/mL using 96-well cell culture microplates with 50  $\mu$ L/well of MH broth. Tests were performed with *S. aureus* ATCC<sup>®</sup> 25923 and oxacilin as quality control and comparative parameter. After the incubation period (35°C, 24 hours), 30  $\mu$ L of resazurin was added to the wells as this solution is indicated for detecting microbial growth. *S. officinalis* plant extract showed bacteriostatic effect on all strains with MIC values varying between 1,5625mg/mL and 25 mg/mL. The best results were obtained against the genus *Bacillus* with *B. subtilis* ATCC 23859 having the lowest MIC value of 1,5625mg/mL, followed by *B. cereus* ATCC 11778 with MIC value of 3,125mg/mL. On the other hand, 12 strains had the highest MIC value of 25 mg/mL, including *P. aeruginosa* ATCC 27853, *Proteus mirabilis* ATCC 25923, *Serratia marcescens* ATCC 8100, *Salmonella* ATCC 14028, *Staphylococcus aureus* ATCC 25923 and *S. aureus* ATCC 29213. These results indicate the possibility of using *Salvia officinalis* plant extract as alternative treatment against several bacteria strains, especially against *Bacillus* ssp.

Key-words: plant extract, antibacterial activity, *Salvia officinalis*

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