

ANTIMICROBIAL ACTIVITY OF *Pimpinella anisum* L. ESSENTIAL OILS FROM DIFFERENT GEOGRAPHICAL ORIGIN

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ABSTRACT

Pimpinella anisum L., commonly known as anise, is one of the oldest species from the *Apiaceae* family used by people, being firstly cultivated in Egypt and then in Greece, Rome and the Middle East. Even today, *Pimpinella anisum* fruits, seeds and essential oils are globally used in the food and beverage industry. Also, it is well-known that besides other characteristics, geographical origin of essential oils may have important influence on their biological activity.

Considering the above, the objective of this work was to evaluate the antimicrobial potential of anise essential oils originating from Serbia and Russia over nine referent cultures of microorganisms. The preliminary screening of antimicrobial activity was performed by disk diffusion method. According to the obtained preliminary results, it can be concluded that the both tested oils showed high antimicrobial activity against *B. cereus* ATCC 11778, *S. aureus* ATCC 25923, *E. coli* ATCC 25922, *A. brasiliensis* ATCC 16404 and also against *C. albicans* ATCC 10231 in the case of Serbian essential oil. Moderate activity of the essential oils were confirmed against *S. Typhimurium* ATCC 13311, while no activity was observed against *L. monocytogenes* ATCC 35152, *P. aeruginosa* ATCC 27853 and *S. cerevisiae* ATCC 9763. In almost all cases of positive antimicrobial activity against the selected microorganisms, the essential oil from Serbia expressed from slightly to considerable better results than the Russian essential oil. Furthermore, the minimal inhibitory concentration of the both essential oils was determined for all selected microorganisms. Based on the obtained results, the lowest minimal inhibitory concentration of 0.78 % was noticed for Serbian essential oil in the case of two gram-positive bacteria *B. cereus* and *S. aureus*. On the other hand, the highest minimal inhibitory concentration of above 100% was determined for microorganisms that were resistant to these oils according to the disk-diffusion method. In accordance with the gained results, it can be clearly pointed out that the tested oils, especially essential oil from Serbia, could be possibly used as a promising antimicrobial agent for protection against different microbial strains or as preservative in many products.

Keywords: essential oils, antimicrobial activity, Pimpinella anisum