

PP62. *Satureja hortensis* L. essential oil causes *Acinetobacter baumannii* membrane disruption

Verica Aleksić Sabo^{1*}, Neda Mimica-Dukić², Rok Kostanjšek³, Jelena Narančić¹,
Isidora Nikolić¹, Petar Knežević¹

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Essential oils are promising antimicrobial agents against various bacteria, including *Acinetobacter baumannii*, a highly resistant clinical opportunistic pathogen with an increasing prevalence. The traditional application of the aromatic and medicinal plant *Satureja hortensis* L. (Lamiaceae) as a natural remedy for the treatment of inflammatory diseases, nausea, diarrhea, and various infectious diseases is well known. The aim of the study was to determine the antimicrobial activity and potential target site for *S. hortensis* essential oil against *A. baumannii*. The effect of the essential oil was determined using the microdilution broth method. The determined minimal inhibitory concentration (MIC=1 $\mu\text{l mL}^{-1}$) showed that *S. hortensis* essential oil possesses a significant anti-*A. baumannii* effect. The *A. baumannii* reference strain ATCC 19606 cells in the exponential growth phase were treated for 3 h at 37 °C with MIC of *S. hortensis* essential oil and examined by scanning electron microscopy. The electron micrographs highlighted the occurrence of collapsed cells with perforations, cell content leakage, cell debris, but also cell autoaggregation (Fig. 1B). The autoaggregation was further confirmed by an autoaggregation test: untreated cells (Fig. 1A) were partially autoaggregative, while the treated cells were highly autoaggregative, as a result of changes of the cell surface properties. Thus, the essential oil affected the membrane systems of *A. baumannii* cells, causing structural changes of the bacterial cells. Since *A. baumannii* strains are susceptible to *S. hortensis* essential oil, the oil possesses a great potential in the control of growth of this species.

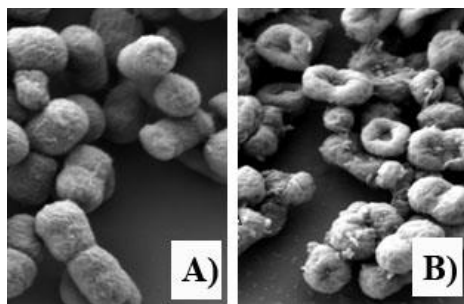


Fig. 1. *S. hortensis* essential oil effect (B) on the cells of *A. baumannii*; untreated control (A); magnification 20,000 \times

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¹Department of Biology and Ecology; ²Department of Chemistry, Biochemistry and Environmental Protection, Faculty of Sciences, University of Novi Sad, Novi Sad, Serbia; ³Department of Biology, Biotechnical Faculty, University of Ljubljana, Ljubljana, Slovenia.

*Corresponding author: verica.aleksic@dbe.uns.ac.rs