

## PP60. Essential-oil component combinations: possibilities against respiratory tract pathogens

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Nowadays, the excessive use of antimicrobials leads to the growing appearance of resistant pathogens in the case of respiratory tract infections (RTIs). Therefore, the discovery of new alternatives, which could support their therapy is an important challenge. Combination of the effective substances is one of the possible solutions. Based on this possibility, several studies focused on the interaction between essential oils (EOs) and their volatiles in the last decade.

Therefore, the aim of the present study was to evaluate the most effective EO components of cinnamon bark, thyme, clove, peppermint, and citronella oils. Direct bioautography (DB) was used in the detection of interaction profiles of *trans*-cinnamaldehyde, eugenol, thymol, menthol, geraniol, citronellal, and citral against methicillin-resistant *Staphylococcus aureus* (MRSA, 4262), resistant *Pseudomonas aeruginosa* (RPA, 34205), and *P. aeruginosa* (ATCC 27853). First, the minimal detectable dose (MDD) of individual components was determined. According to the MDD values, the combined, as well as the individual compounds, were applied to the TLC plates. The diameters of the inhibition zones were measured with the Motic Images Plus 2.0 program. The statistical analysis was performed with the Mann-Whitney-Wilcoxon test of the R Studio 1.1.383 program.

In the case of *P. aeruginosa*, a combination of thymol and menthol was active; against RPA, *trans*-cinnamaldehyde combined with thymol was found to be effective. Against MRSA, menthol combined with *trans*-cinnamaldehyde, and eugenol also showed enhanced activity.

According to our knowledge, we applied for the first time the DB for the detection of antimicrobially effective combinations of EO compounds. It could be regarded as a cost-effective and quick screening method. In the future, we would like to focus on the combinations of EOs and their main components with antibiotics as well.

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