

Antimicrobial effect of five essential oils

Jilcovici Aura-Stefania^{1,2}, Menghiu Gheorghita^{1,2*}

¹ Advanced Environmental Research Laboratories; West University of Timisoara, Oituz 4A, 300086 Timisoara, Romania,

² Department of Biology-Chemistry; Faculty of Chemistry, Biology, Geography, West University of Timisoara, Pestalozzi 16, Timisoara 300115, Romania

*Corresponding author e-mail: gheorghita.menghiu@e-uvt.ro

Abstract: This study focused on testing the effect of 5 commercial essential oils, peppermint, lavender, lavandin, lemongrass and oregano on 4 strains of microorganisms, *Staphylococcus aureus*, *Escherichia coli*, *Enterobacter cloacae* and *Candida albicans*.

Introduction

Essential oils are highly concentrated compounds extracted from plants (flowers, leaves, seeds, fruits) and have numerous benefits for human health. They are used in aromatherapy to reduce stress and pain, to aid sleep, and in infections due to their anti-inflammatory, antiviral, antibacterial, antiseptic, and antifungal properties.

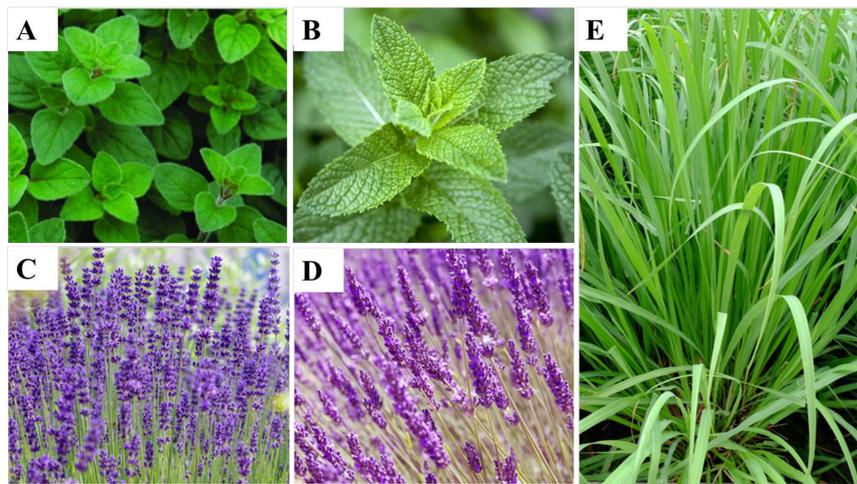


Fig.1. The plants from which the essential oils were investigated: oregano (A), peppermint (B), lavender (C), lavandin (D) lemongrass (E).

Materials and methods

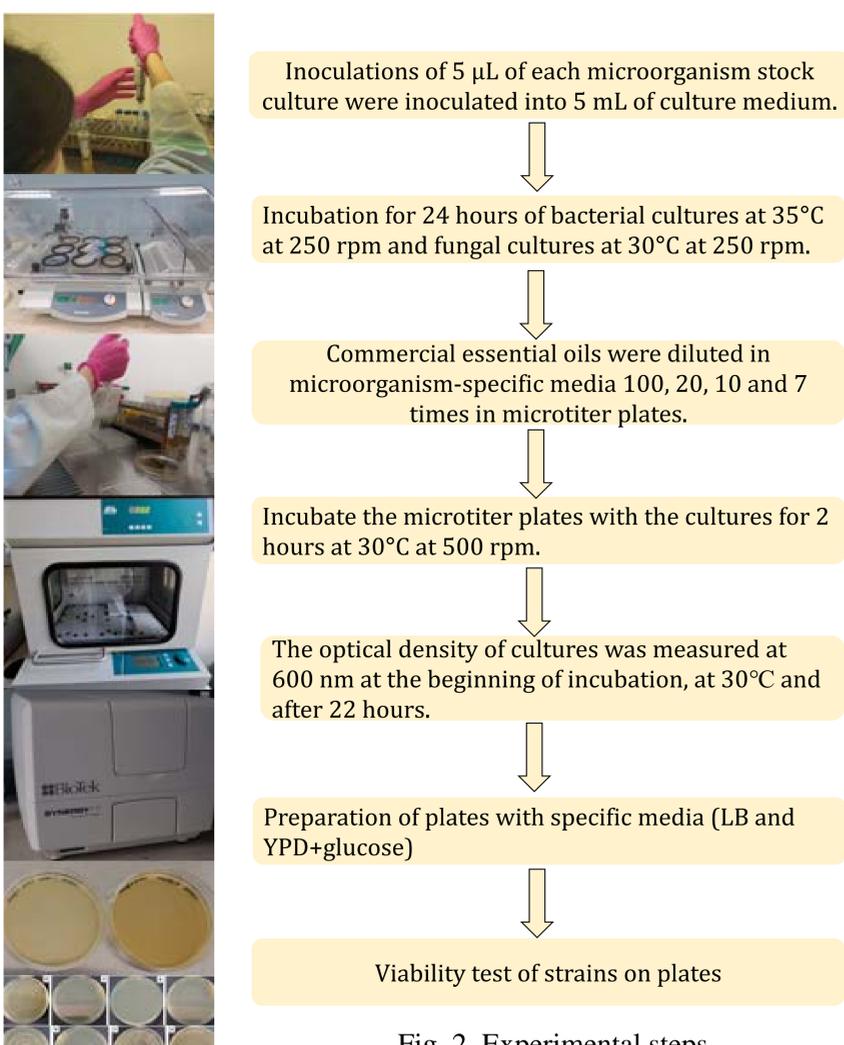


Fig. 2. Experimental steps

Results and discussions

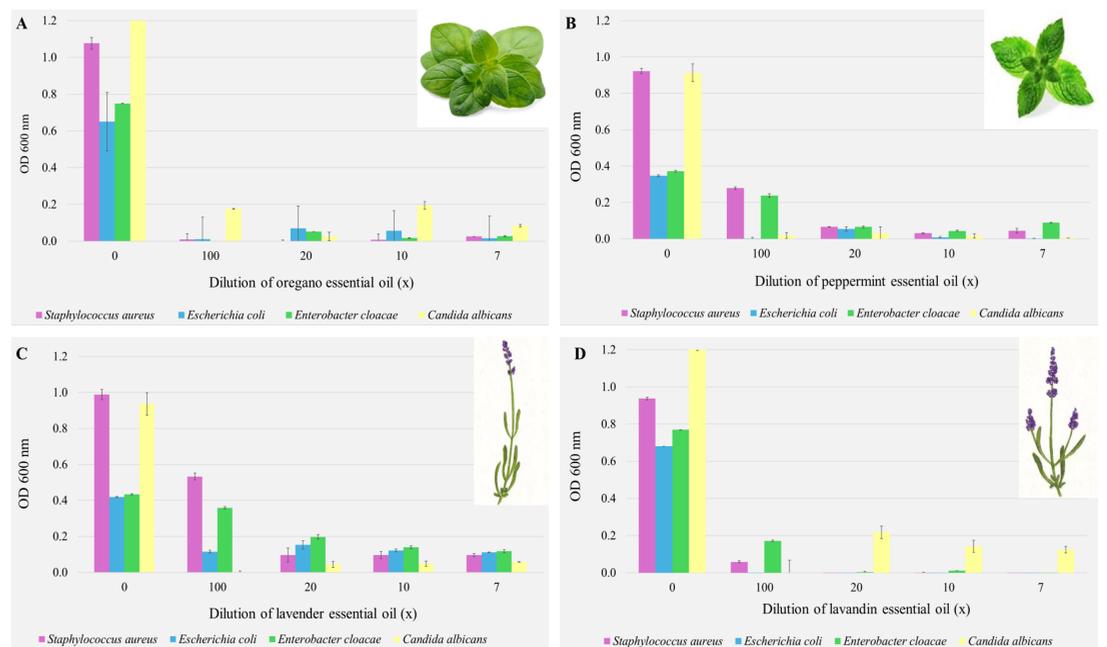


Fig.3. Inhibitory activity of the essential oil of oregano (A), peppermint (B), lavender (C) and lavandin (D) on different strains of microorganisms.

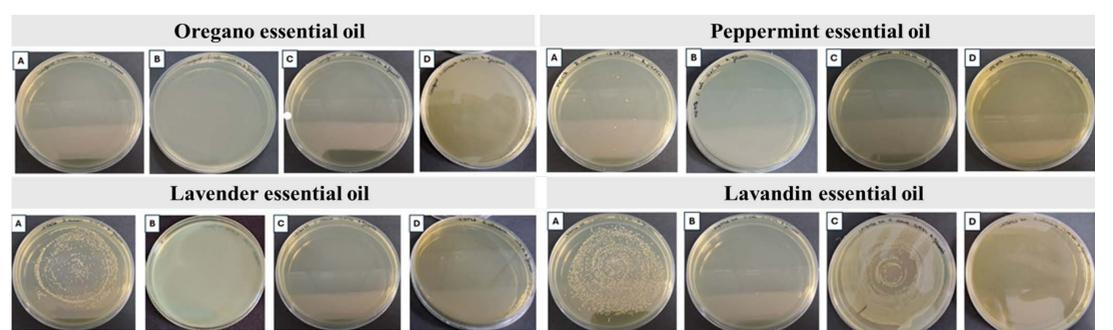


Fig.4. Viability test of different microorganisms (A- *Staphylococcus aureus*, B- *Escherichia coli*, C- *Enterobacter cloacae*, D- *Candida albicans*) after 24 h of incubation on oregano, peppermint, lavender and lavandin essential oils, 100 x diluted

Conclusions

The results showed that at 100-fold diluted oils of lemongrass, lavender and oregano had the strongest inhibitory effect on all strains used.

Lavender oil followed by peppermint oil at the same dilution had the weakest inhibitory effect.

Essential oils of lemongrass and oregano have a strong bactericidal effect against all strains used

Lavender and peppermint essential oils have a bactericidal effect against *Escherichia coli*, *Enterobacter cloacae* and *Candida albicans* strains and a bacteriostatic effect against *Staphylococcus aureus* strains.

Lavandin essential oil has a bacteriostatic effect against strains of *Staphylococcus aureus* and *Enterobacter cloacae* and a bactericidal effect against strains of *Staphylococcus aureus* and *Candida albicans*.