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Inhibitory Effect of Helichrysum arenarium Essential Oil on the Growth of Food Contaminated Microorganisms

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Abstract : The aim of this study was to determine the antimicrobial effect of Helichrysum arenarium L. essential oil in "in-vitro" condition on the growth of seven microbial species including Bacillus subtilis, Escherichia coli, Staphylococcus aureus, Saccharomyces cereviciae, Candida albicans, Aspergillus flavus and Aspergillus parasiticus using microdilution method. The minimum inhibitory concentration (MIC) and minimum bactericidal or fungicidal concentration (MBC, MFC) were determined for the essential oil at ten concentrations. Finally, the sensitivity of tested microbes to the essential oil of H. arenarium was investigated. Results showed that Bacillus subtilis (MIC=781.25 and MBC=6250 µg/ml) was more resistance than two other bacterial species. Among the tested yeasts, Saccharomyces cereviciae (MIC=97.65 and MFC=781.25 µg/ml) was more sensitive than Candida albicans, while among the fungal species, growth of Aspergillus parasiticus inhibited at lower concentration of oil than the Aspergillus flavus. The extracted essential oil exhibited the same MIC value in the liquid medium against all fungal strains (48.82 µg/ml), while different activity against A. flavus and A. parasiticus was observed in this medium with MFC values of 6250 and 390.625µg/ml, respectively. The results of the present study indicated that Helichrysum arenarium L essential oil had significant ($P<0.05$) antimicrobial activity; therefore, it can be used as a natural preservation to increase the shelf life of food products.

Keywords : Helichrysum arenarium, antimicrobial, essential oil, MIC
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