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## Evaluation of phytochemical analysis and antimicrobial activities Allium essential oil against the growth of some microbial pathogens

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### Abstract

In this experimental study, the Allium essential oil (AHEO) was extracted through the hydrodistillation method. AHEO components were identified through gas chromatography/mass spectrometry (GC/MS), and its antioxidant properties and total phenolic content were examined through the methods of 2,2-diphenyl-1-picrylhydrazyl (DPPH),  $\beta$ -carotene/linoleic acid inhibition and Folin-Ciocalteu, respectively. The antimicrobial effect of AHEO was evaluated on *Pseudomonas aeruginosa*, *Escherichia coli*, *Bacillus cereus*, *Bacillus subtilis*, *Staphylococcus aureus*, *Streptococcus pyogenes*, and *Candida albicans* through the methods of well diffusion, disk diffusion, minimum inhibitory concentration, and minimum bactericidal/fungicidal concentration. phytochemical constituents (alkaloids, tannins, saponins, flavone and glycosides) were evaluated. 5-chloroorcylaldehyde with a percentage of 45.6% was the major compound of AHEO. Increasing concentration of AHEO had a significant effect ( $p \leq 0.05$ ) on inhibition zone diameter. The MICs of the AHEO varied from 0.25 mg/ml to 2 mg/ml. The MBCs/MFCs of the AHEO varied from 0.25 mg/ml to 4 mg/ml. The results of phytochemical screening of AHEO showed the existence of alkaloids, tannins, saponins, flavone and glycosides. There was also little difference between disk diffusion and well diffusion methods, and the data was well distributed throughout the X and Y components.

**Keywords:** Microbial pathogens, Essential oil, Antimicrobial effect, Phytochemical analysis.

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