Antioxidant and Antibacterial Activity of Citrus aurantium Extract

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This study aims to investigate the chemical composition, antioxidant, and antimicrobial activity of Citrus aurantium L zest essential oil. The identification of the chemical compounds was done using chromatography analysis. The antioxidant activity was studied by the 1,1-diphenyl-2-picrylhydrazyl (DPPH) radical scavenging assay. Results showed that the main components of the essential oil were limonene (85.22%), β-myrcene (4.3%), and α-pinene (1.29%). Regarding the DPPH radical scavenging ability, the zest essential oil showed higher activity than limonene. The antimicrobial activity of the essential oil against pathogenic [Staphylococcus aureus, Salmonella sp. (clinical isolate), Pseudomonas aeruginosa, Bacillus subtilis, Escherichia coli] microorganisms by disc-diffusion method was examined. Gram-positive bacteria were more sensitive to the oil (inhibition zones being between 9 and 12.5 mm) and the minimum inhibitory concentration was more than 600 ppm; Gram-negative bacteria were less sensitive. The obtained essential oil displayed promising results for its application as a biopreservative agent. The antioxidant activity depends upon concentration and increased with increasing amount of the extracts. The free radical scavenging and antioxidant activities may be attributed to the presence of phenolic and flavonoid compounds present in the extracts. Result: The results obtained in the present study indicate that the leaves, fruits and peel of Citrus aurantium, Citrus limetta and Citrus limon serve as the potential source of natural antioxidants

Keywords : Antioxidant; Citrus aurantium; Citrus limetta; Citrus limon; free radical; Rutaceae.