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Phenolic Compounds and Antimicrobial Properties of Pomegranate (Punica granatum) Peel Extracts

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Abstract : In recent years, tendency to use of natural antimicrobial agents in food industry has increased. Pomegranate peels containing phenolic compounds and anti-microbial agents, are counted as valuable source for extraction of these compounds. In this study, the extraction of pomegranate peel extract was carried out at different ethanol/water ratios (40:60, 60:40, and 80:20), temperatures (25, 40, and 55 ˚C), and time durations (20, 24, and 28 h). The extraction yield, phenolic compounds, flavonoids, and anthocyanins were measured. ‎Antimicrobial activity of pomegranate peel extracts were determined against some food-borne ‎microorganisms such as Salmonella enteritidis, Escherichia coli, Listeria monocytogenes, ‎‎Staphylococcus aureus, Aspergillus niger, and Saccharomyces cerevisiae by agar diffusion and MIC methods. Results showed that at ethanol/water ratio 60:40, 25 ˚C and 24 h maximum amount of phenolic compounds ‎‏(‎‏‎349.518‎‏ ‏mg gallic acid‏/‏g dried extract), ‎flavonoids (250.124 mg rutin‏/‏g dried extract), anthocyanins (252.047 ‎‏‏mg ‎cyanidin‏‎3‎‏glucoside‏/‏‎100 g dried extract), and the strongest antimicrobial activity were obtained. ‎All extracts’ antimicrobial activities were demonstrated against every tested ‎‎microorganisms‏.‎‏ Staphylococcus aureus showed the highest sensitivity among the tested ‎‎‎microorganisms.

Keywords : antimicrobial agents, phenolic compounds, pomegranate peel, solvent extraction
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