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Antibacterial activities and total phenolic contents of grape pomace extracts

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Abstract: The aim of this study was to determine the total phenolic contents and antibacterial effects of grape pomace extracts (cultivars Emir and Kalecik karası) against 14 bacteria, and the effects of the extracts on the growth and survival of two of the bacteria during storage. The total phenolic contents of grape pomace of Emir and Kalecik karasi cultivars extracted with acetone/water/acetic acid (90:9.5:0.5) were 68.77 and 96.25 mg GAEg⁻¹, respectively. The agar well diffusion method was used to test the antibacterial activity of the extracts at 1, 2.5, 5, 10 and 20% (w/v) concentrations in methanol on spoilage and pathogenic bacteria including *Aeromonas hydrophila*, *Bacillus cereus*, *Enterobacter aerogenes*, *Enterococcus faecalis*, *Escherichia coli*, *Escherichia coli* O157:H7, *Mycobacterium smegmatis*, *Proteus vulgaris*, *Pseudomonas aeruginosa*, *Pseudomonas fluorescens*, *Salmonella enteritidis*, *Salmonella typhimurium*, *Staphylococcus aureus* and *Yersinia enterocolitica*. All the bacteria tested were inhibited by extract concentrations of 2.5, 5, 10 and 20%, except for *Y enterocolitica* which was not inhibited by the 2.5% concentration. However, pomace extracts at 1% concentration had no antibacterial activity against some of the bacteria. According to the agar well diffusion method, *E coli* O157:H7 was the most sensitive of the bacteria. Generally, using the serial dilution method, while the extracts at 0.5% concentration had bacteriostatic activities on *E coli* O157:H7 and *S aureus*, the extracts appeared to have bactericidal effects at 1 and 2.5% concentrations. In accordance with this method, *S aureus* was more sensitive than *E coli* O157:H7 to the extracts.

Keywords: grape pomace extract; antibacterial activity; total phenolic content