

Chemical composition and antibacterial and cytotoxic activities of *Allium hirtifolium* Boiss

ABSTRACT

Allium hirtifolium Boiss. known as Persian shallot, is a spice used as a traditional medicine in Iran and, Mediterranean region. In this study, the chemical composition of the hydromethanolic extract of this plant was analyzed using GC/MS. The result showed that 9-hexadecenoic acid, 11,14-eicosadienoic acid, and n-hexadecanoic acid are the main constituents. The antibacterial activity of the shallot extract was also examined by disk diffusion and microdilution broth assays. It was demonstrated that Persian shallot hydromethanolic extract was effective against 10 different species of pathogenic bacteria including methicillin resistant *Staphylococcus aureus* (MRSA), methicillin sensitive *Staphylococcus aureus* (MSSA), *Staphylococcus aureus*, *Staphylococcus epidermidis*, *Streptococcus pneumoniae*, *Escherichia coli*, *Escherichia coli* O157:H7, *Salmonella typhimurium*, *Proteus mirabilis*, and *Klebsiella pneumoniae*. Specifically, the minimum concentration of the extract which inhibited bacterial growth (MIC values) was 1.88 mg/mL for most of the gram-positive bacteria. This concentration was not much different from the concentration that was safe for mammalian cells (1.50 mg/mL) suggesting that the hydromethanolic extract of Persian shallot may be a safe and strong antibacterial agent.

Keyword: Chemical composition; Antibacterial; Cytotoxic activities; *Allium hirtifolium* Boiss