

ANTIMICROBIAL ACTIVITY OF THE EXTRACT OF *ZANTHOXYLUM RHETSA* FRUIT AGAINST ORAL PATHOGENS

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Abstract. Oral disease causing by gram-positive cocci and yeast is a major public health problem. In this study we aimed to investigate the antimicrobial activity of the extract of *Zanthoxylum rhetsa* fruit against *Streptococcus mutans* ATCC 25175, *Streptococcus pyogenes* ATCC 19615, *Staphylococcus aureus* ATCC 25923, methicillin-resistant *Staphylococcus aureus* (MRSA) DMST 20651 and *Candida albicans* ATCC 90028 in order to potentially develop it as an antimicrobial agent. We assessed the antimicrobial activity of the studied extract by evaluation the zone of inhibition using the disc diffusion method and the minimal inhibitory concentration (MIC) and minimal microbicidal concentration (MMC) using the broth micro-dilution method. We also aimed to determine the phytochemical compounds in the studied extract using gas chromatography and mass spectrometry (GC-MS). Two studied extracts were tested. These were obtained by macerating the fruit and extracting it with either 50% or 95% ethanol and the decoction in water. The 50% extract gave inhibition zones of 11-13 mm and MICs of 0.078-1.25 mg/ml and MMCs of 0.313-5 mg/ml. The 95% extract gave inhibition zones of 7-9 mm and MICs of 0.313-5 mg/ml and MMCs of 1.25 to more than 5 mg/ml. The studied extract was comprised primarily of monoterpenes: limonene epoxide (28.9%), limonene oxide (9.8%), cis-carveol (7.7%), delta-terpinene (4.6%), p-cymene (3.2%) and terpinene-4-ol (2.6%). The 50% ethanolic extract of *Zanthoxylum rhetsa* fruit had antimicrobial activity against the studied oral pathogens. Further studies are needed to determine its potential for clinical use in treating the studied pathogens.

Keywords: *Zanthoxylum rhetsa*, antimicrobial activity, oral pathogen

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