



MICROWAVE-ASSISTED EXTRACTION OF PHENOLIC ANTIOXIDANT COMPOUNDS AND ANTIBACTERIAL ACTIVITIES OF *THYMUS TRANSCAPICUS* ESSENTIAL OIL FROM NORTH KHORASAN PROVINCE OF IRAN

Maryam Sardarodiyani¹, Roya Amiri Qandashtani², Ramezan Ali Mahian³, Mozhgan Nasiri Shahri³, Akram Arianfar^{1*}

¹*Young Researchers and Elite Club, Quchan Branch, Islamic Azad University, Quchan, (Iran)*

²*Torbat Heydariyeh University of Medical Sciences, Torbat Heydariyeh, Iran*

³*Department of Food Science and Technology, Quchan Branch, Islamic Azad University, Quchan, Iran*
**a_aria_1443@yahoo.com*

ABSTRACT

Thymus is a traditional pharmaceutical plant which is also used as a spice and perfumed plant in different industries. In present study, Microwave Assisted Hydrodistillation (MAHD) and hydrodistillation in a Clevenger-type apparatus methods. After preparation of essential oils, antioxidant properties were measured by two methods, 2,2-diphenyl-1-picrylhydrazyl (DPPH) and ferric reducing antioxidant power (FRAP). BHT was used as positive control for comparison. Also antibacterial activities were screening against two Gram-positive bacteria (*Staphylococcus aureus*, and *Listeria Monocytogenes*) and two Gram-negative bacteria (*Salmonella enterica*, *Escherichia coli*) by minimum inhibitory and bactericidal concentration (MIC and MBC) and disc and well diffusion method. Comparison between two extraction methods showed that extraction efficiency of antioxidant and antimicrobial activity at, Microwave Assisted Hydrodistillation method is more than hydrodistillation method. Results presented here suggest that the essential oil of *Thymus transcasicus* possess strong antimicrobial and antioxidant properties, and therefore, they can be used as a natural preservative ingredient in food and/or pharmaceutical industry.

Keywords:

Thymus transcasicus, Essential oil, Antimicrobial activity, Antioxidant, MIC and MBC.