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**Master Thesis Defense**

Entitled

EXTRACTION AND BIOACTIVITY EVALUATION OF ANTIOXIDANT COMPONENTS FROM UAE  
BASED MEDICINAL HERB

by

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Abstract

Recently, the industry of natural bioactive compounds (NBAC) is expanding dramatically due to its high medical potentials. High bioactivity of natural extracts from a wide range of plants is evident from the reported literature. For instance, NBACs show antibacterial, antifungal, antimicrobial, anti-inflammatory, anticancer and antioxidant activities. *Teucrium stocksianum* Boiss. from the *Lamiaceae* family is a known herb in the traditional medicine in United Arab Emirates. Multiple bioactivities of *T. stocksianum* were recorded such as anti-inflammation, analgesia, antioxidation, anticancer, antinociception and antimicrobial bioactivity. In this thesis, the extraction of NBACs from *T. stocksianum* was studied with Microwave-assisted extraction using Deep eutectic solvent (MAE-DES). The resultant yield of extraction and bioactivity were compared with the results of Ultrasound-assisted extraction with water, Hydrodistillation and Soxhlet with four different solvent (methanol, ethanol, Diethyl ether and n-hexane). MAE-DES showed higher results in term of yield (54.18%) and antioxidant bioactivity (21.67 mg Trolox equivalent/g DW). The antioxidant bioactivity was measured using spectrophotometry analysis with Total antioxidant kit (Sigma-Aldrich #MAK334). The effects of operation parameters for MAE-DES method on the total antioxidant capacity of extracts and the yield of extraction were investigated. Four independent variables, solid–liquid ratio (1:10, 1:30, and 1:50 ratio of raw material to DES, w/v), microwave power (220, 400, and 800 W), microwave time (60, 120, and 180 s), and DES concentration (30 %, 50 %, and 70 %)—were used for the preliminary range.

**Keywords:** Herbal extraction, pharmaceuticals, essential oil, extraction solvents, extraction methods, bioactivity.