PHYTOMICAL SCREENING AND ANTIOXIDANT ACTIVITY OF A MEDICINAL PLANT

Officinalis Melissa L.

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INTRODUCTION

Medicinal plants are the main sources of natural antioxidants. Melissa officinalis belongs to the family of Lamiaceae. It is a perennial and aromatic plant that grows in all over the Mediterranean region. Also, it is a species widely used in traditional medicine for its biological properties attributed mainly to polyphenols. [1]

The present work focuses on the characterization and phytochemical identification and antioxidant activity of water extract of Melissa officinalis.

MATERIAL & METHODS

- Plant materials & Extract preparation procedure:
  The plant materials of the present study, leaves of M. officinalis. The extract was obtained from its powder by using solid/liquid exhaustion extraction method described by Romani & al,(2006).[2].

- For the identification of the different components of the plant, we used phytochemical tests based on coloring reactions or precipitation by specific chemical reagents.

- Quantitative evaluation:
  - The total phenolic content was determined using the Folin-Ciocalteu reagent method (expressed as Gallic acid equivalent in mg/g material, mgGAE/g). It was evaluated by the method of Singleton & Ross (1965).[3].
  - The Total flavonoid content was calculated using the standard quercetin compound. (Expressed as microgram of quercetin equivalent/mg, μgQE/mg.) It was evaluated by the method of Bahorun & al.,(1996).[4].
  - Dosage of condensed tannins is based on the condensation of polyphenolic compounds (flavans-3-ols) with vanillin in an acidic medium, expressed in gram equivalent of tannic acid *per gram equivalent of tannic acid per gram of dry matter (mg EAT/g DM). It was evaluated by the method described by Swain & Hillis(1959). [5].
  - Antioxidant Activity (1, 1-diphenyl-2-picrylhydrazyl radical inhibition (DPPH) Determined via the DPPH Assay employed for determination of extracts ability to scavenge the DPPH radical. The capacity of the M. officinalis L. extract to inhibit the DPPH free radical was evaluated by the method described by Mohammadi H. et al. [6].
  - Determination of the IC50: The concentration of the sample essential to inhibit 50% of the radical DPPH was calculated by linear regression of the inhibition percentages calculated.
Phytochemicals (from the Greek word phyto, meaning plant) are biologically active, naturally occurring chemical compounds found in plants, which provide health benefits for humans further than those attributed to macronutrients and micronutrients [7].

M. officinalis contains some phenolic and flavonoid compounds such as rosmarinic acid [8]. The antioxidant properties of M. officinalis are associated with the high content of phenolic and flavonoids compounds that may contribute to the plant’s antioxidant activities [9].

This extract is considered a potential source of natural antioxidants, which is sustained by the significant antioxidant activity that was determined in this study (DPPH, IC50 = 25.98 ± 1.63 μg/mL), the obtained results in this study are similar to those reported by Lin, J. et al. and Mabrouki, H. et al. (IC50 = 36.15 ± 1.71 μg/mL; 18.16 ± 0.64 μg/mL, respectively) [9,10].

**RESULTS & DISCUSSION**

<table>
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<tr>
<th>Compounds</th>
<th>Content</th>
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<tbody>
<tr>
<td>Total phenolic content, (mgGAE/g)</td>
<td>105.6 ± 5.21</td>
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<tr>
<td>Total flavonoid content, (mgQE/g)</td>
<td>51.51 ± 2.91</td>
</tr>
<tr>
<td>Total tannins content, (mg EAT/g DM)</td>
<td>65.09 ± 2.91</td>
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Values were expressed as means ±S.D. (n= 3).

**BIBLIOGRAPHY**