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ANTIOXIDANT TOCOPHEROL CONSTITUENTS FROM SOME MEDICINAL AND AROMATIC PLANTS

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The antioxidant activities of spices and herbs are attributed not only to the polar phenolic and essential oil contents but also to tocopherol, and the presence of tocopherols in plant leaves was also demonstrated by hexane extraction in a recent report [1–7]. However, no further information is available concerning the tocopherol constituents of the Turkish endemic herbs as a source of natural antioxidants in this study. So, our aim was to detect the tocopherol constituents of the Turkish endemic herbs as a source of natural antioxidants in this study.

In this study, the tocopherol contents of Turkish herbs, including *Origanum sipyleum*, *Origanum minitiflorum*, *Saturega cilicica*, *Thymus zygoides*, *Thymbra spicata*, and *Origanum vulgare* subsp. *hirtum*, were determined in order to evaluate their use as natural nonpolar antioxidants.

The results are shown in Table 1. Tocopherol contents ranged from 6.04 to 188.4 and 0.22 to 11.90 μg/g herbs for α- and γ-tocopherols, respectively. On the other hand, δ-tocopherol was not found in all samples, β-tocopherol was found in 2.21 μg/g only in samples of *O. sipyleum*, and γ-tocopherols were not found in *T. zygoides*. Among the herbs, *O. vulgare* had the greatest total tocopherol value of 193.01 μg/g. The presence of tocopherols in plant leaves was shown also by Lagouri and Boskou [2], Gomez-Coronado et al. [6], Demo et al. [7], Cerrati et al. [8], Chevolleau et al. [9], Chevolleau et al. [10], and Mallet et al. [11].

As a result, the herbs could be used as a cheap source of natural nonpolar antioxidants, and the tocopherols obtained from them could be used to prevent autooxidation in oils and in oil-bearing foods if organoleptic effects are acceptable.
Herbs, collected wild during the flowering stage from Konya, Seydisehir-Beysehir main road in Turkey in August at altitudes of 1200 m, were used in this study.

The extracted herb [12] were analyzed by high performance liquid chromatography (HPLC) according to Lampi et al. [13]. The analysis was performed in triplicate.

TABLE 1. Tocopherol Content of Some Turkish Herbs (Leaves+Flowers) in μg/g

Herbs	α-Tocopherol	γ-Tocopherol	Total tocopherol
O. vulgare	188.4±0.80	4.61±0.47	193.01±0.64
*O. sipyleum**	88.06±0.46	1.73±0.19	92.00±0.22
O. minitiflorum	142.10±1.01	0.34±0.41	142.44±0.71
S. cilicica	55.51±0.97	0.22±0.20	55.73±0.59
T. zygoides	6.04±0.20	-	6.04±0.20
T. spicata	70.06±0.96	11.90±1.97	81.96±1.47

- Not detected.

*Flowers, β-tocopherol, 2.21±0.02 μg/g.

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