Chapter 5

ANALYSIS OF ANTIOXIDANT CAPACITY OF COMMERCIAL *Citrus lemon* ESSENTIAL OIL BY SPECTROPHOTOMETRIC METHOD

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INTRODUCTION

Citrus lemon (lemon) is a valuable therapeutic and aromatic plant from the Rutaceae family. It has yellow and elliptical edible fruit and is evergreen. The term lemon actually comes from the old French word for "lemon" and is expressed in different terms in different languages. While it is expressed with the terms "lamun" in Arabic and "lmun" in Persian; it goes by the names "lemon" in English, "zitrone" in German, and "le citron" in French. (1, 2). Soils that tend to be acidic, have a wide pH range, are successful in terms of drainage, and can retain moisture provide the most suitable conditions for the growth of C. lemon (3). Although it is unclear what C. lemon's precise native environment was, it has spread from Southeast Asia to Northeast India and then to China and has been cultivated since ancient times (4).

The main component of C. lemon is vitamin C, and it also contains terpenes, hydrocarbons, flavonoids, minerals, and essential oils. Scurvy is treated with vitamin C. llemon juice was employed in the treatment of scurvy disease even before vitamin C was discovered (5). In addition, in traditional medicine, lemon juice, which is rich in vitamin C content, is used to relieve hypertension, colds, sore throat, fever and chest pain; The essential oil (EO) of C. lemon has been used for cough since ancient times (6). In ancient Rome, the essential oil of C. lemon

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4. CONCLUSION

According to the needs of consumers, the demand for natural substances is increasing in the food, cosmetics, and pharmaceutical sectors. Consequently, research on essential oils is vital in addition to determining the components of essential oils as well as linking those components with the bioactive qualities of essential oils. The protective impact that essential oils have against oxidative damage is something that has to be investigated in great detail. With regards to the present investigation, the antioxidant capacity of C. lemon essential oil and ascorbic acid prepared in methanol using the DPPH method were compared. According to the data obtained and other studies in the sources, the radical scavenging effect of C. lemon essential oil was found to be lower than that of ascorbic acid. This is thought to be due to the fact that ascorbic acid is a potent antioxidant and the differences in the amount of phenolic component that provides antioxidant properties in C. lemon content. Our study suggests that C. lemon essential oil can be used as an auxiliary supplement as a result of the experiments and literature reviews.

Differences in phenolic content are likely to vary depending on the growing location, rainfall, temperature, humidity, the mineral content of the soil, time of harvest, method of obtaining the essential oil, and from which part of the plant it is obtained. This will cause differences in the results of antioxidant activity. In new studies on essential oils, compounds that affect antioxidant capacity can be determined by performing phenolic content analyses.

In this study, the evaluation of C. lemon essential oil by dissolving in solvents of different polarities (ethyl acetate, ethanol), examining its antioxidant capacity using different methods, studying the essential oils and extracts obtained from fruits and leaves grown at different maturity, climatic conditions, and soil yield, Determining their flavonoid contents and examining their antioxidant activities will also contribute to the literature.

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