

## Determination of the Volatile Organic Compounds, Antioxidant and Antimicrobial Properties of Microwave-Assisted Green Extracted Ficus Carica Linn Leaves

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**Abstract :** The edible fig plant, Ficus carica Linn, belongs to the Moraceae family, and the leaves are mainly considered agricultural waste after harvesting. It has been demonstrated in the literature that fig leaves contain appealing properties such as high vitamins, fiber, amino acids, organic acids, and phenolic or flavonoid content. The extraction of these valuable products has gained importance. Microwave-assisted extraction (MAE) is a method using microwave energy to heat the solvents, thereby transferring the bioactive compounds from the sample to the solvent. The main advantage of the MAE is the rapid extraction of bioactive compounds. In the present study, the MAE was applied to extract the bioactive compounds from Ficus carica L. leaves, and the effect of microwave power (180-900 W), extraction time (60-180 s), and solvent to sample amount (mL/g) (10-30) on the antioxidant property of the leaves. Then, the volatile organic component profile was determined at the specified extraction point. Additionally, antimicrobial studies were carried out to determine the minimum inhibitory concentration of the microwave-extracted leaves. As a result, according to the data obtained from the experimental studies, the highest antimicrobial properties were obtained under the process parameters such as 540 W, 180 s, and 20 mL/g concentration. The volatile organic compound profile showed that isobergapten, which belongs to the furanocoumarins family exhibiting anticancer, antioxidant, and antimicrobial activity besides promoting bone health, was the main compound. Acknowledgments: This work has been supported by Yildiz Technical University Scientific Research Projects Coordination Unit under project number FBA-2021-4409. The authors would like to acknowledge the financial support from Tubitak 1515 - Frontier R&D Laboratory Support Programme.

**Keywords :** Ficus carica Linn leaves, volatile organic component, GC-MS, microwave extraction, isobergapten, antimicrobial

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