



Studying the Response of Greek Basil *Ocimum basilicum* var. *minimum* to Treatment with High Doses of Selenium

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Abstract:

Previous published literatures have been established the impact of selenium application in a trace amount on yield and active constituents of basil plants. In the current study, the effect of high doses of selenium application on growth of Greek basil *Ocimum basilicum* var. *minimum* growth and its essential oil compounds was investigated. Obtained result exhibited that the foliar application with (0, 40, 80, 120, 160) mg/L of selenium reduced the plants growth parameters and plant content of phytopigments and primary metabolites such as carbohydrates, protein, and proline. Refractive index of essential oil diminished post selenium application, while,

specific gravity increased at 160 mg/L. Selenium application also caused alteration in the secondary metabolites profile. A reduction was obtained in the volatile compounds of essential oil such as Linalool, Eugenol and Methyleugenol with selenium treatment. On the other hand, unsaturated fatty acids such as Linolenic acid and phytosterols such as Campesterol, Stigmasterol and beta-Sitosterol increased with applied selenium concentration.

Keywords: *Ocimum basilicum* var. *minimum*, Selenium, Primer metabolites, Secondary metabolites

Introduction

The Lamiaceae family is one of the most recognized sources of aromatic herbs worldwide and an excessive source of extracts with powerful antipathogens and antioxidant properties (Kaya, Yigit, & Benli, 2008). Genus *Ocimum*, known as basil, provide 150 species that belong to Lamiaceae family. *Ocimum basilicum* L is a one of species that show large morphological differences relying to species including size and colour of leaf or flower, and height and shape of plant. The chemical

composition such as volatile organic and phenolic compounds also affected according to species (Mkaddem Mounira et al., 2022). The major aroma constituents of *Ocimum basilicum* L according to Lee and his colleagues are linalool, estragole, methyl cinnamate, eugenol, and 1,8-cineole (Lee, Umamo, Shibamoto, & Lee, 2005). However, the existence and formation of these components are effected by numerous agents such as environment (Tursun & Telci, 2020), growing and harvesting states (Bowes & Zheljzakov, 2004) as well as drying and

