

## INVESTIGATION OF ESSENTIAL OIL EXTRACTION FROM LAVENDER (*SEUTHOPOLIS* VARIETY) BY HYDRODISTILLATION ACCORDING TO THE PROCESS DURATION

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### Abstract

The success of modern agriculture is based on the implementation of new, precise machines and the use of good practices (plant care throughout the year and especially during the growing season), which leads to an increase in crop yields. This determines to search for the most appropriate solutions to increase yields without adversely affecting the plants. The present experiment aims to trace the methodology for extracting essential oil from the lavender variety "Seuthopolis" by hydrodistillation with the Clevenger apparatus and study the processing parameters (the optimal extraction time) and extraction yields.

The study was carried out in July 2021, after the lavender plants were harvested from the experimental field, located in the Chirpan region of Bulgaria. Univariate ANOVA analysis was applied to determine the optimal time (35, 40, 45, 50, 55, 60, and 65 minutes) to extract the essential oil by hydrodistillation. Significant differences between the mean values of the obtained essential oil yield were proved by Post Hoc multiple comparisons with the Tukey test at level  $p < 0.05$ .

It has been established that the maximum amount of lavender oil (0.71%) was extracted between 60 and 65 minutes. Since no statistically significant differences between them have been proven, it can be concluded that the optimal extraction time is 60 minutes. The high coefficient of determination ( $R^2 = 0.74$ ) indicates that 74% of the variations in the extraction yields are due to the influence of the extraction time.

The research team plans to repeat the experiment in the current agricultural year with a larger number of samples to check whether there will be repeatability of the results and their conclusions. The essential oil yields obtained from the respective experimental fields treated with different biological growth regulators will be monitored.

**Key words:** Lavender, Extraction, Essential oil, Hydrodistillation, ANOVA, Tukey test.