

**P-039: A time-course study on essential oil of rosemary (*Rosmarinus officinalis*) under drought stress**

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Along with the present study, the changes in essential oil profile of rosemary (*Rosmarinus officinalis*) under drought stress were investigated. The leaf samples of rosemary were collected on three consecutive days and then the drought stressed groups were irrigated as recovery stage. Accordingly, 26 compounds were identified using gas-chromatography coupled with headspace system. Of the compounds,  $\alpha$ -pinene, camphene,  $\beta$ -pinene,  $\beta$ -myrcene, p-cymene, d-limonene, eucalyptol, and camphor are of the major compounds, representing the 84.874 % of the identified compounds. Of those compounds,  $\alpha$ -pinene,  $\beta$ -myrcene, and camphor percentage increased with the drought but the percentage of  $\beta$ -pinene decreased. Moreover, the changes in lipid, amide and carbohydrate regions for the samples were examined using Attenuated Total Reflectance Fourier Transform Infrared spectroscopy. The intensities: 2920 to 2852, 1727 to 1687 and 1452 to 1035  $\text{cm}^{-1}$  bands corresponding to the lipids, amides, and carbohydrates, respectively were higher in CRD1, CRD2, CRD3, CD3, SD3, SRD1. Considered all experimental groups, the intensities were partially higher in control group. For the discrimination of the experimental groups, variance analysis, clustering analysis, and principal component analysis were performed. Drought and well-watered (control) groups were clearly discriminated and confirmed using differential statistical tools, suggesting the plausible role of metabolites in response to the changing environmental conditions.

Keywords: ATR-FTIR, drought, essential oil, GC-MS Headspace, rosemary, *Rosmarinus officinalis*