

## WATER RESTRICTION ENHANCES ALPHA-PINENE PERCENTAGE IN CORIANDER FRUIT ESSENTIAL OIL

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Keywords: *Coriandrum sativum*, water stress, volatiles, monoterpene

Drought is a currently field condition and water management is an essential factor for plant production and quality. Coriander (*Coriandrum sativum*) fruits present high essential oil (EO) content and are used as food flavoring. The main compound of coriander fruit essential oil is linalool, which defines its characteristics; however other minor compounds as camphor, borneol,  $\gamma$ -terpinene and  $\alpha$ -pinene are also present and determine the aromatic profile. On coriander fruit EO,  $\alpha$ -pinene is responsible for woody, spicy and oily aroma (1). This work aims to evaluate the effect of limited water availability on  $\alpha$ -pinene content in coriander fruit essential oil. Plants grown in a greenhouse (5,5 L pots filled with commercial plant substrate) were submitted to water limitation composed by control (0.53 kPa), moderate (3.5 kPa) and severe (21.85 kPa) treatments. The experimental design was completely randomized with four repetitions and two pots as experimental unit (15 plants per pot). The fruits were harvest periodically until the end of productive cycle. The EO was extracted by hydrodistillation (Clevenger apparatus) for two hours. To the collector tube it was added 5 mL of hexane. After extraction the upper phase was collected, weighted and stored in freezer. Chemical analysis were carried out on GC-MS (Shimadzu, GC17A, selective detector QP5050 - Shimadzu), Elite-5 column (30 m, 0.25  $\mu$ m) and the following conditions: injector temperature 220 °C, column initial temperature 50 °C, column final temperature 200 °C, initial pressure 67.4 kPa, detector temperature 290 °C, and solvent cut 3 minutes. Compound identification was performed by comparing sample mass spectra and data from equipment library (NIST05). The  $\alpha$ -pinene percentage was enhanced by water restriction. Plants grown under moderate and severe treatments presented 74.25% increase in  $\alpha$ -pinene percentage, with no statistical difference and superior to control (2,33% in average). The results demonstrate that coriander fruit EO quality varies in response to water management through aroma modification since this characteristic is affected by minor compounds, as  $\alpha$ -pinene percentage.

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Acknowledgments: CNPq, CAPES, UENF