

ANALYSIS OF VOLATILE COMPOUNDS IN EXTRA VIRGIN OLIVE OIL FROM RIO GRANDE DO SUL BY SPME/GC-MS

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Extra virgin olive oil (EVOO) has a complex aroma, which is related to the genetics of the olive tree (cultivar), the edaphoclimatic conditions where it is grown and the conditions of the extraction process. Koroneiki is a Greek variety, whose fruit is small and produces very fruity oil, with herbal and green apple notes besides having certain astringency, with notes of almonds, fig and peels. This cultivar is known for its resistance to water stress and windy conditions, as well as for producing exceptional quality oils with high yield. This work aimed to identify the volatile compounds present in a Koroneiki monovarietal EVOO sample from Rio Grande do Sul (Brazil), through solid-phase microextraction (SPME) and gas chromatography coupled to mass spectrometry (GC-MS). For SPME analysis, a divinylbenzene/carboxen/polydimethylsiloxane (DVB/CAR/PMDS) fiber was used. A 1.0 g sample and 0.2 µL of a standard solution of alkanes (C₈-C₁₈) were added to a 4 mL vial. The sample was conditioned (10 min, 40 °C) and the SPME fiber was exposed to the headspace of the sample for 40 min at the same temperature. Then, the fiber was transferred to the injector of a GC-MS for thermal desorption for 3 min (at 250 °C), in splitless mode. The oven of the GC was cooled with liquid nitrogen for a focusing effect. The identifications were made through the injection of authentic standards, calculation of the linear retention indices and comparison of the mass spectra to different databases. Eighteen compounds, including (E)-2-hexenal, (Z)-3-hexenal, characteristic compounds of olive oil, produced enzymatically from polyunsaturated fatty acids via the lipoxygenase pathway were identified. These compounds contribute positively to the aroma of EVOO; (E) -2-hexenal is responsible for bitter and astringent odor and (Z) -3-hexenal by green leaves.

Keywords: Olive oil; Koroneiki; volatile compounds; SPME; GC-MS.