



Comprehensive study on the characteristics and authenticity of Egyptian monovarietal coratina virgin olive oil

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Abstract: Coratina virgin olive oil obtained from one variety (monovarietal) cultivated in Giza, Egypt is usually unique, valuable and has high price, which make it vulnerable to adulteration by cheaper oils. The complete profiles of tocopherols, phytosterols and fatty acid composition of the Egyptian monovarietal coratina extra virgin olive oil (CEVOO) were determined using HPLC and GLC to reveal the exact features of this oil which is unique among the other oils. Also, it is planned to determine the authenticity of CEVOO adulterated with soybean and sunflower oils. Models of soybean or sunflower oils as adulterants in CEVOO at levels of 5, 10, and 20% were prepared. The CEVOO is characterized by higher content of α -tocopherol (97.77%). The results showed that gamma-tocopherol content could be used as a parameter for detection of CEVOO adulterated with soybean oil at levels as low as 5%. In addition, the marked decreases in alpha- / gamma-tocopherol as well as PUFA/alpha-tocopherol ratios indicate the adulteration. It was noticeable that CEVOO is characterized by the high amount of squalene (3471.8 $\mu\text{g/g}$). Moreover, the phytosterol profile is almost decisive in clarifying the adulteration of CEVOO with cheaper oils thus, 5% sunflower oil could be detected by presences of 7-stigma- and 7-avenasterol. Meanwhile, the increase in campesterol indicated the presence of other oils. In addition, authenticity factor and the ratio of β -sitosterol/campesterol+ stigmasterol can indicate the presence of adulteration of CEVOO at levels as low as 5%. The highest monounsaturated fatty acid content in CEVOO was 73.3%, which is mainly due to the predominant presence of oleic acid. Linoleic / linolenic acids ratio could be used as proof for adulteration of CEVOO. These results through light on the characteristics of Egyptian monovarietal CEVOO as well as the detection of its adulteration.

Key words: Monovarietal coratina extra virgin olive oil, tocopherols, phytosterols, fatty acids, adulteration, authenticity.