A Portable Raman Sensor for the Rapid Identification of the Olive Oil

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The adulteration of the olive oil with lower-priced oils and its distinction of different classifications are serious problems in the olive oil market, a fast on-site screening method is needed to be developed. In addition to existing GC/MS and infrared spectroscopy, Raman spectroscopy is a very powerful tool to study the quality of the oils [1-3]. A compact analyzer system was devised based on RamTracer™ and effective data processing programs, which are able to be applied for on-site detection of olive oil with high sensitivity. There is no sample preparation required, the olive oils with different qualities can be discriminated directly only in seconds. We investigated the concentration dependent of extra virgin olive oils mixed with other type of edible oils (peanut oil or soybean oil), which the concentration range is between 0 and 100% in 5% increments by volume. Different concentration of olive oils was successfully identified using characteristic peak intensity ratio based on the concentration dependent investigation. Due to its noninvasive and non-destructive detection, high throughput, real time, no consumable chemical disposals and portable instrument, this Raman sensor has potential to be deployed for on-site rapid discrimination of the virgin olive oil adulteration and classification of different quality appraisal.

Keywords: portable Raman sensor, olive oil, rapid identification

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