

## FROM THE LEAF TO THE OIL: THE USE OF SSR MARKERS FOR OLIVE OIL TRACEABILITY

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Today in the agro-food industry there is a strong interest in DNA analysis applications for the identification of both raw materials and processed food.

Up to now, various categories of DNA-based markers have been employed in *Olea europaea L.* with cultivar identification purposes but few information are available about their use to analyse olive oils.

In previous works we used both AFLP and SSR markers directly on DNA extracted from virgin olive oils. (Montemurro et al., 2008; Pasqualone et al., 2007). The AFLP technique has showed to be a powerful tool for olive oil traceability, but it is very laborious and expensive. On the contrary SSR markers are simpler and less expensive than AFLPs, but if they are performed on agarose gel, they show very few alleles for each primer pair. (with respect to AFLPs).

Since generally microsatellites have short sizes, this induce to expect good possibilities of detection also in case of degraded DNA such as that recovered from olive oil.

Microsatellites differ only by few base pairs from one cultivar to another and their analysis by agarose gel electrophoresis could not make possible the correct evaluation of these small differences. This problem can be solved by using capillary electrophoresis.

The aim of this work was to evaluate the use capillary electrophoresis of SSR markers for cultivar traceability purposes in olive oil. After a preliminary set up of the method, we analysed by capillary electrophoresis of SSR markers (carried out by the automatic sequencer ABIPRISM 3100 AVANT), the leaves from 7 *O. europaea L.* cultivars and the respective derived olive oils. A number of two SSR markers was chosen, after a previous screening on a panel of 50 available markers. The analysis of the electrophoregrams evidenced a medium number of 5 alleles per each marker. In almost all samples, the profile obtained from leaves was exactly the same of that recovered from oils, but with a better resolution in comparison to gel electrophoresis.

Montemurro *et al.*, 2008 AFLP molecular markers to identify virgin olive oils from single Italian cultivars. *European Research Food and Technology* 226: 1439-1444.

Pasqualone *et al.*, 2007. Effectiveness of Microsatellite DNA Markers in Checking the Identity of Collina di Brindisi PDO Extra Virgin Olive Oil. *Journal of Agriculture Food and Chemistry* 55: 3857-3862.