Abstract - SY30

A RELIABLE PROTOCOL FOR DNA ISOLATION FROM COMMERCIAL EVO OIL SUITABLE FOR PCR-BASED FINGERPRINTING

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Olive is a species that originates from regions surrounding the Mediterranean Sea and the olive tree is mainly cultivated for oil production. Italy is the second largest olive oil producer after Spain. Extra virgin olive oil (EVOO) represents a high-quality olive oil and a certification label added to a bottle of EVOO allows food fraud to be prevented and consumers to trace oil "from tree to table". With the purpose to identify an effective and robust DNA isolation protocol suitable for PCR-based fingerprinting method useful for fraud detection, we tested and compared each other four different protocols previously developed. However, none of these proved to be highly reproducible. Therefore, we decided to improve one of them with some key modifications in order to enhance the quality and quantity of the extracted DNA while reducing the starting material, reagents, costs and time of extraction. The developed DNA isolation protocol from commercial EVOO was robust and highly reproducible. Then, to verify the effectiveness of the proposed DNA extraction protocol, we performed the analysis of DNA polymorphisms of nine simple sequence repeat (SSR) coupled with eight SNP markers on DNA isolated from three EVOO samples of unknown composition. The SSR markers were able to define genetic patterns of the three EVOOs, and the SNP markers were used to verify the presence of Italian olive cultivars among the most representative used in the PDO and PGI certifications. The whole investigation strategy herein described might favor producers in terms of higher revenues and consumers in terms of price transparency and food safety.