A USEFUL METHOD FOR THE IDENTIFICATION OF PLANT GENERA IN FRESH FRUIT JUICES

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The aim of our study was to develop a method to trace fruits used for juice production in order to guarantee authenticity and protect the consumer against adulteration, either through accidental or fraudulent substitutions, that can lead to lower the value of high quality raw material.

The ability to extract DNA from fresh juices using a CTAB based protocol was tested in order to obtain genetic material suitable for PCR applications. Quality DNA extraction from juices may be difficult due to high polysaccharides and PCR inhibitors content, therefore, samples were extracted according to Tel – Zur. DNA was diluted and tested for PCR using a common primer pair developed by Ortola – Vidal and new primers designed in this study. The target sequence was a part of the large sub-unit of ribulose biphosphate carboxylase gene (rbcL), a conserved multi-copy plant gene containing single nucleotide polymorphisms able to discriminate between plant genera.

The study is also on the way of implementing a mini sequencing approach, designing species specific primers with the 3’ terminus upstream any specific single nucleotide mutation, able to distinguish among the genera Rubus, Fragaria, Vaccinium, Punica, Citrus, Ribes and Malus. Using the new designed primers on rbcL sequence the maximum amplicon length achievable from such a processed matrix was also determined.

Furthermore, with the purpose of obtaining a quantitative analysis, another method involving the amplification of 5S rRNA gene region using new primers was also developed. These primers were designed to amplify species-specific fragments distinguishable by means of a quantitative Real Time approach employing SYBR Green and recording of the melting curve.
