

SII-P-6

POLYPHENOLS AND LIMONIDS CHARACTERIZATION IN MANDARIN CULTIVARS AND ITS HYBRIDS

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Breeders always seek for new mandarin-type cultivars with distinctive and valuable characteristics. Among the pursued properties new mandarins should have, are the absence of seeds, easy peeling, good colour and flavor, as well as early maturity and remarkable nutritional properties. Secondary metabolites such as polyphenols and limonoids are responsible of many of the organoleptic and nutraceutical attributes mandarins have. In the present work, the profile of polyphenols and limonoids in the pulp of phylogenetic related mandarin varieties using LC-MS/MS and HPLC-DAD was studied. The aim was to find cues of on the inheritance of phenotypic characters of interest from parents to hybrids. A total of 19 cultivars were evaluated in the 2015 and 2016 harvests. Four of them gave origin to the remaining 15. All pulp flavonoid profiles were recorded and 10 polyphenolic compounds were quantified, (ferulic acid, eriocitrin, tangeretin, narirutin, didymin, hesperidin, among others), to perform chemometric studies. Limonoids such as nomilin and limonin were detected in different concentrations according to the variety analyzed, showing an overall trend of hybrids to have an intermediate value of concentration in relation to the original progenitor. Page was the variety with the highest content of limonoids, and the lowest content was found in Willow leaf. Page was the only cultivar with grapefruit within its phylogeny. Hesperitin derivatives were the most common flavanones among the different varieties. Only hyperoside glycosides were detected but no neohyperoside glycosides, characteristic for their bitter taste, were found in any of the varieties analyzed. Ripe fruit stability between both years, in terms of flavonoids concentration, was checked. In addition, relationship between the profile of parents and hybrids were found. This study allows the characterization of the cultivars under study from a chemotaxonomic point of view, providing valuable data on their nutraceutical properties.

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