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NMR METABOLOMICS AS A PREDICTION TOOL FOR CONSUMERS' ACCEPTANCE OF MANDARINS

Ignacio Migues[1], Veronica Cesio[1], Adriana Gámbaro[1], Guillermo Moyna[2], Cecilia Rodriguez[1], Joana Lado[3], Fernando Rivas[3], Horacio Heinzen[1*]

Aiming to correlate flavor and consumers' acceptance of different mandarin varieties to their metabolic profile, an untargeted metabolomics approach was applied. Choi's broad polarity extraction method was followed to cover the widest portion of the mandarins' metabolome. New hybrid mandarin varieties from INIA's Citrus Research Program were selected and studied with their parental varieties. The extracts were analyzed through ^{1}HNMR (400 MHz). The acquired spectra were processed, aligned and binned to allow the comparison between samples. Finally, we used statistical metabolomic tools to correlate the spectral data with consumers' acceptance to identify the signals that weighted the most in the differentiation between samples. The consumers' acceptance data was gathered using the CATA method from 100 individuals tasting peeled mandarins. The consumers' preference was obtained in a 1 to 9 scale. A simple correlation between NMR signals and consumers acceptance could be established. The relationship among proton signals due to sucrose, fructose and glucose properly weighted and those of the alpha protons of the carboxylic acids from the krebs cycle correlates point by point with the acceptability scale established by consumers. The results show that this analytical approach, initially thought for disease identification in human samples, is also useful for natural products analysis and their correlation with different types of bioactivity, in this case for taste and flavor, from which objective tools for their evaluation are not usually described. These results could be applied in breeding programs to select new cultivars based in chemical data that correlates with consumers' acceptance without bias or subjective opinions, speeding up the development of new *Citrus* varieties.

[1] Facultad de Química. Universidad de la República (UdelaR), Montevideo, Uruguay. *heihoracio@gmail.com
[2] Polo Agroalimentario de Paysandú. Universidad de la República (UdelaR), Paysandú, Uruguay.
[3] Instituto Nacional de Investigación Agropecuaria (INIA), Estación Experimental INIA Salto Grande. Ruta 3, Camino al Terrible SN, Salto 50000, Uruguay.