

Potential of Using Sugar-Rich Fruits as Natural Sweetening Food Ingredients

Claudia Sánchez and Inês Jesus.

National Institute for Agricultural and Veterinary Research (INIAV), I.P., Alcobaca, Portugal

INTRODUCTION & AIM

The clean label concept is undergoing continuous development, driven by increasing consumer demand for transparency regarding food ingredients. Incorporating fruit pulps into processed foods offers a promising strategy for natural sweetening, promoting healthier formulations while aligning with consumer preferences for recognizable, minimally processed ingredients.

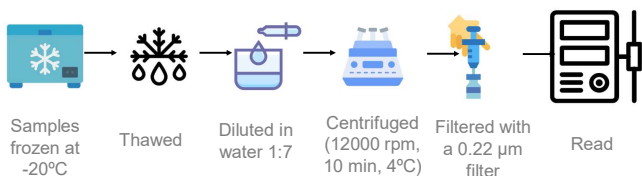
The aim of this work was to promote the valorization of Portuguese regional varieties of apples and pears, both for their organoleptic quality and their potential use as natural food additives.

METHODOLOGY

Five apple cultivars, 'Pêro Coimbra', 'Pêro de Borbela', 'Pardo Lindo', 'Noiva' and 'Repinau', and six pear cultivars, 'Carapineira', 'Carapineira Roxa', 'Torres Novas', 'Bela-Feia', 'Amorim' and 'Lambe-os-Dedos' were analyzed in two consecutive harvests, 2021 and 2022.

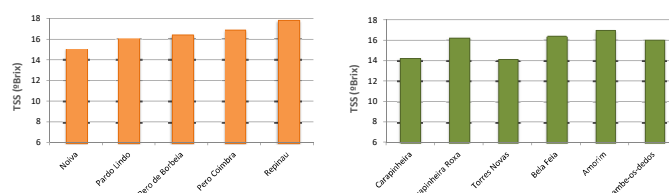


Fruits were peeled, cut, and juiced. Total soluble solids (TSS) content were determined by refractometry, and the remaining material was frozen for later analysis. Sugar profiles were characterized using a high-performance liquid chromatography (HPLC) equipped with a Refractive Index detector.



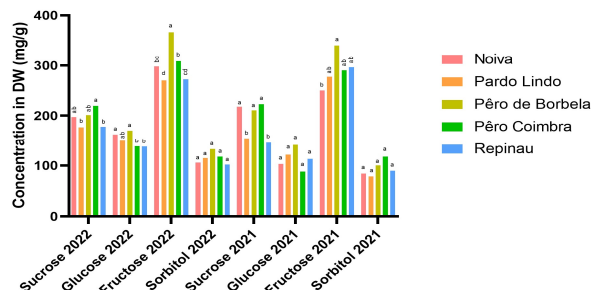
RESULTS & DISCUSSION

'Pardo Lindo' apple exhibited a higher TSS content, about 17 °Brix, indicating superior quality compared to the other samples. Among the pear cultivars, 'Carapineira Roxa' was the sweetest, with a value of 17 °Brix, although all pear samples demonstrated a notably high sweetness, with values exceeding 14 °Brix.

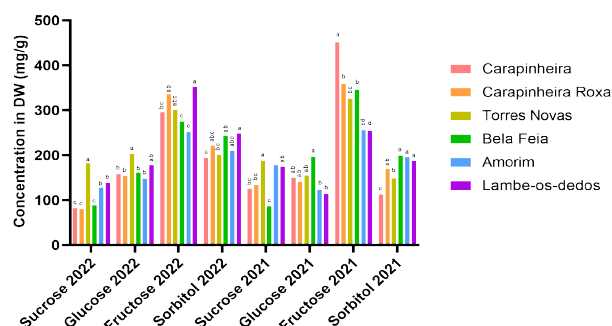


In apples, sugar composition followed a consistent pattern: fructose > sucrose > glucose > sorbitol. Similarly, fructose was the dominant sugar in all pear cultivars, with levels exceeding 250 mg/g DW and reaching up to 450 mg/g DW.

Different sugar concentrations in regional apple varieties



Different sugar concentrations in regional pear varieties



CONCLUSION

Given its high sweetening power, the predominance of fructose in these varieties highlights their potential as natural ingredients for use as alternatives to refined sugars in food formulations.

FUTURE WORK

In a first approach, the varieties with higher fructose content will be processed into flours and incorporated into formulations for the preparation of pastry and dessert products.