

Comparison of techno-functional properties of ora-pro-nis (*Pereskia aculeata* Miller) flour and its protein concentrate

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With the world's population growing and the concern of consumers for healthier and sustainable products, there is an urgent need for alternative plant protein. The ora-pro-nóbis is a Brazilian leafy vegetable with great potential for exploration, owing to its high protein content (17 to 28%) and digestibility (approximately 85%). This study aimed to investigate and compare the techno-functional properties of ora-pro-nóbis flour (OPNF) and its protein concentrate (OPNPC). The OPNPC was obtained by alkaline solubilization at pH 10.0 and isoelectric precipitation at pH 3.5. The water solubility, water and oil holding capacity, foaming capacity and stability, emulsifying activity and stability indexes, and in vitro digestibility were the properties evaluated. The protein content in OPNF was 24%, while the OPNPC exhibited almost 53% (g.100g⁻¹) on a dry basis. Water holding capacity and emulsifying stability index were the only techno-functional properties that were found to be higher in OPNF (5.44 g.g⁻¹ and 105.16 min, respectively) than in OPNF (2.28 g.g⁻¹ and 86.98 min, respectively). OPNPC showed better in all other techno-functional properties evaluated: oil holding capacity (5.44 g.g⁻¹), emulsifying activity index (24.81 m².g⁻¹), foaming capacity (61.52%) and foaming stability (88.46%). The protein concentration process increased the water solubility of the material more than 3.5 times (OPNF: 23.37%; OPNPC: 87.38%). The improved solubility of the concentrate can be attributed to the remotion of hydrophobic constituents of the flour, such as fibers and others carbohydrates. Moreover, the increased solubility of OPNCP can account for the significant increase in foaming capacity. Regarding in vitro digestibility, there was no significant difference ($P > 0.05$) between samples. Overall, the superior techno-functional properties of the OPNCP highlight that its use as an ingredient is a good alternative for developing new plant-based products.