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THE IMPACT OF SWEETENER CHOICE (RAW VS. REFINED SUGAR) AND BOTANICAL FORTIFICATION (MINT AND GINGER) ON THE ANTIOXIDANT, NUTRITIONAL, AND SENSORY ATTRIBUTES OF ORANGE JAM

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Abstract:

Concerted with contemporary societal preoccupations regarding healthful nutrition and sustainability, fruit jams present an optimal food matrix for integrating the hedonic experience of taste with the delivery of valuable bioactive compounds. Scientific literature consistently underscores the potential of jams to contribute meaningfully to the dietary intake of antioxidants and phenolic compounds, substances renowned for their capacity to mitigate oxidative stress and diminish the risk of chronic diseases. Consequently, the present study aims for the comprehensive development and characterization—encompassing physico-chemical, nutritional, and sensory analyses—of an innovative orange jam assortment fortified with ginger and mint, formulated in two distinct sweetening variants: utilizing refined white sugar (J1) and respectively, utilizing raw sugar (J2). For comparison, two simple variants of orange jam were also produced: one with white sugar (M1) and the second with raw sugar (M2). The J1 assortment recorded the highest content of ascorbic acid, total polyphenols, and the strongest antioxidant activity; the lowest values were signaled in the M1 product. These results highlight the importance of replacing white sugar with raw sugar in jam manufacturing, as well as the addition (even in reduced quantities) of ingredients rich in polyphenolic compounds and other antioxidants, such as mint and ginger, to obtain finished products that are more valuable in terms of natural antioxidant content. Additionally, J1 assortment is distinguished by a high content of dietary fiber in its composition, as well as an excellent sensory profile, being very highly rated by the panelists.

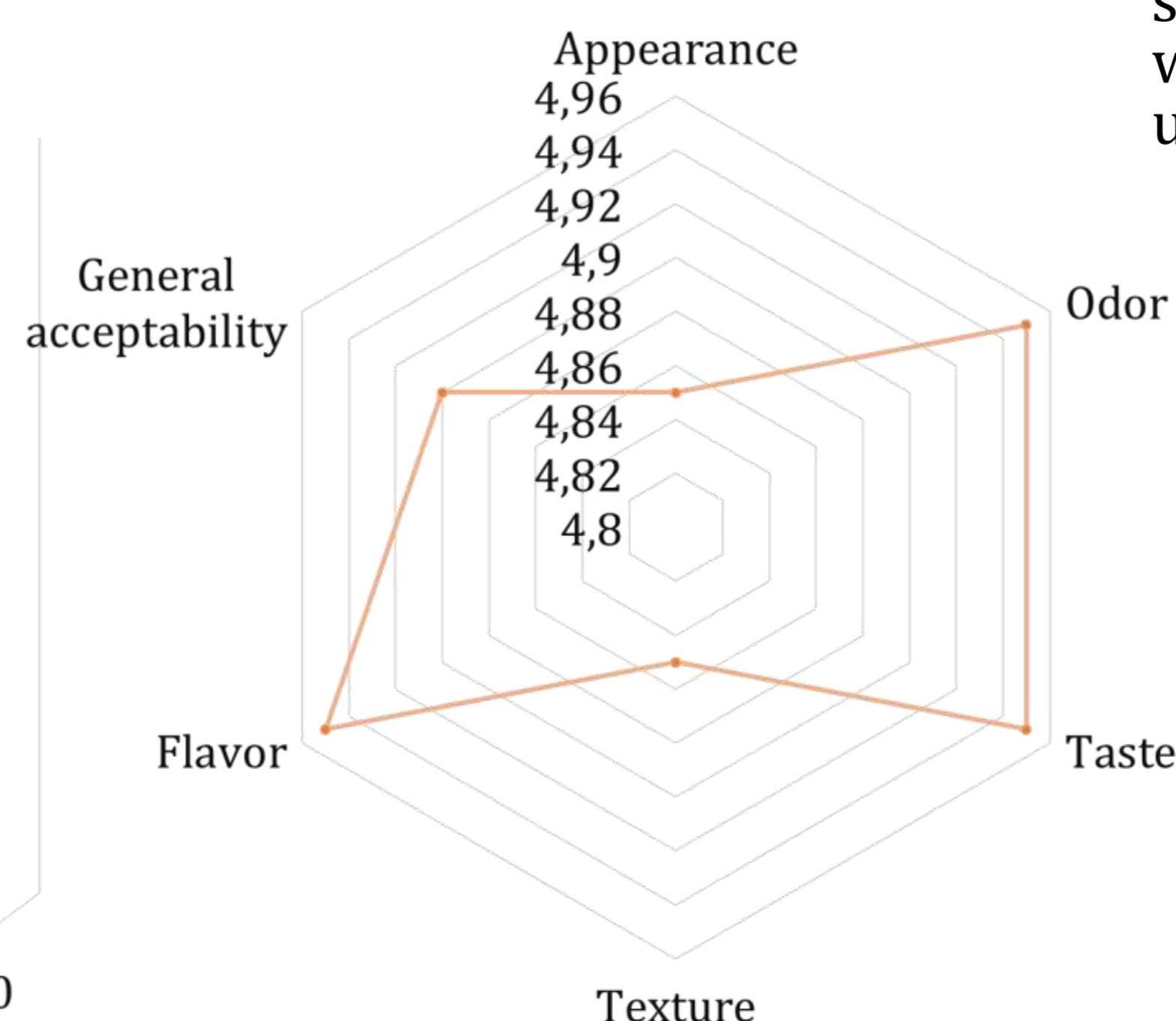
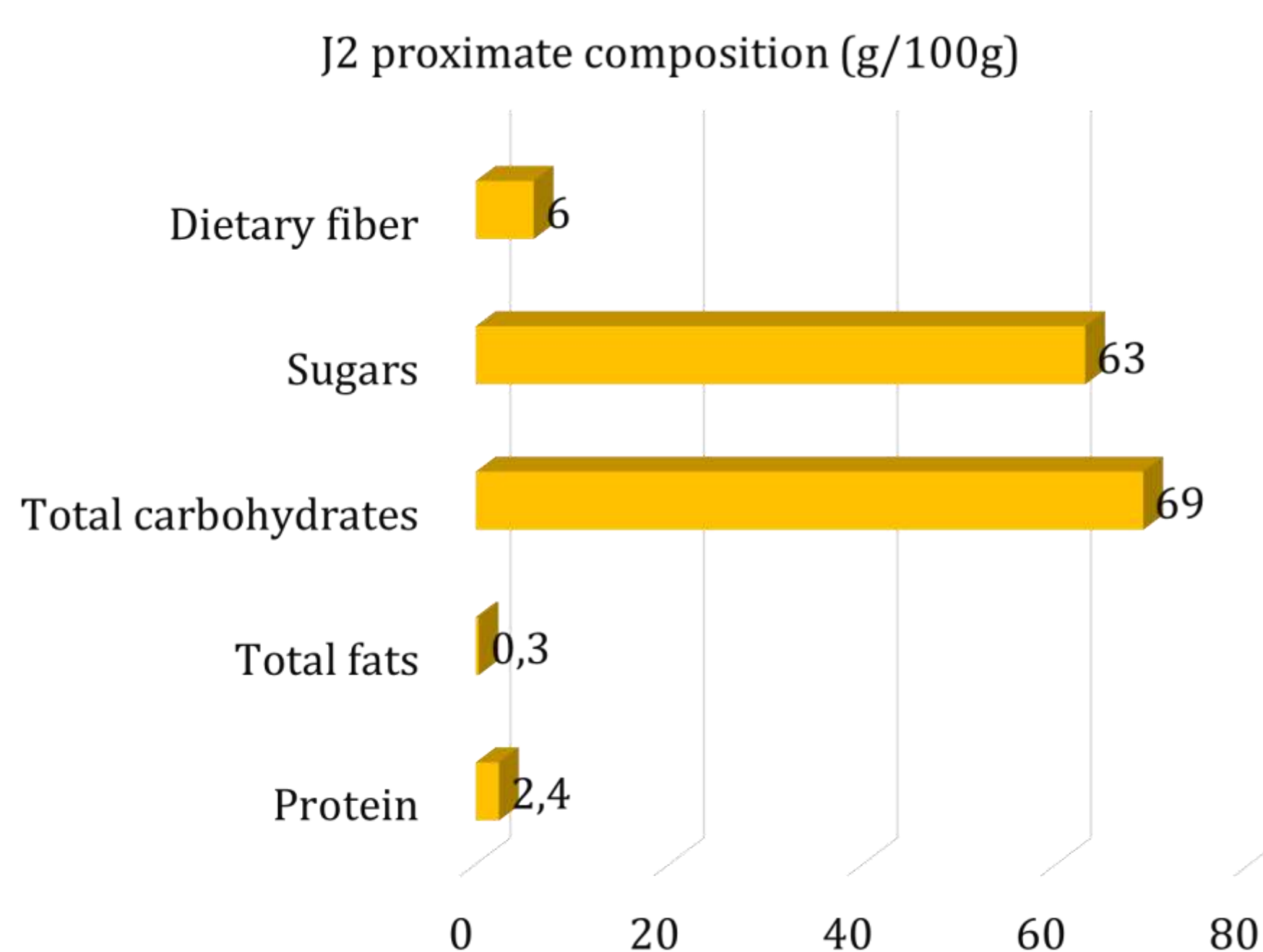
• Results and discussions

Sample	Vitamin C (mg/100g)	Total Polyphenol Content (mg GAE/g)
J1	14.25±0.08	25.03±0.35
M1	12.89±0.10	22.67±0.20
J2	26.92±0.12	45.43±0.40
M2	24.43±0.14	43.20±0.41

Sample	Dilution	RSA (%)
J1	1:10	39.95±0.31
M1	1:10	33.84±0.16
J2	1:10	62.19±0.47
M2	1:10	58.06±0.55



J2



• Conclusions

An innovative orange jam formulation, augmented with ginger and mint, was successfully developed and characterized. The research specifically investigated the impact of the saccharide source (refined white sugar vs. raw sugar) incorporated during the processing stage on the resulting antioxidant, nutritional, and sensory attributes of the final product.

For comparative assessment, a traditional orange jam formulation was concurrently prepared as a control. The results conclusively demonstrated that the innovative formulation utilizing raw sugar exhibited significantly enhanced values for total polyphenol content, ascorbic acid (Vitamin C), and antiradical activity, along with superior overall sensory characteristics, when juxtaposed with the corresponding jam prepared using refined white sugar.

