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Obtaining and characterizing a dessert for people with special nutritional needs

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Abstract: This paper describes the development of an innovative product for people with special nutritional needs, namely a dessert without the following classic ingredients: gluten, lactose, sugar, and eggs. Gluten-free flours were identified and used as alternative ingredients that comply with dietary restrictions.

In this context, several technological recipe variants were developed and tested to obtain a food product with optimal organoleptic properties (taste, texture, appearance). The macronutrient content (proteins, lipids, carbohydrates) and energy value were analyzed.

The resulting product has an improved nutritional profile, with cocoa replaced by carob, dairy products replaced by tofu and coconut milk, and the inclusion of chia, quinoa, and cranberries. This resulted in a dessert rich in fiber, antioxidants, omega-3 fatty acids, and vegetable protein, with a potentially lower glycemic index compared to traditional desserts.

For this study, five food ingredients were analyzed which were added to the final dessert, purchased from specialty stores in Romania. These were: quince juice, quinoa flakes, blue poppy seeds, and tofu. The analyses performed consisted in evaluating the radical scavenging activity (RSA) and quantifying the polyphenol content (TP). For this purpose, alcoholic extracts were obtained from all the above-mentioned products. A 70% ethyl alcohol solution was used and 1:20 dilutions were made.

• Materials and methods

The following raw materials were used to create an innovative product for people with special needs: tofu, organic blue poppy seeds, dehydrated cranberries, quinoa flakes, chia seeds, unroasted carob/locust beans, quince, honey, frozen raspberries, coconut and rice-based drink, grated coconut. In order to obtain a final product with a lamellar or multilayer structure, three preliminary steps were necessary: making the vegan chocolate mousse, obtaining the chia pudding, and making the granola (dry semi-prepared). The finished product was then subjected to physical and chemical tests: determination of dry matter, antioxidant activity, total polyphenol content, and sensory analysis.

• Results and discussions

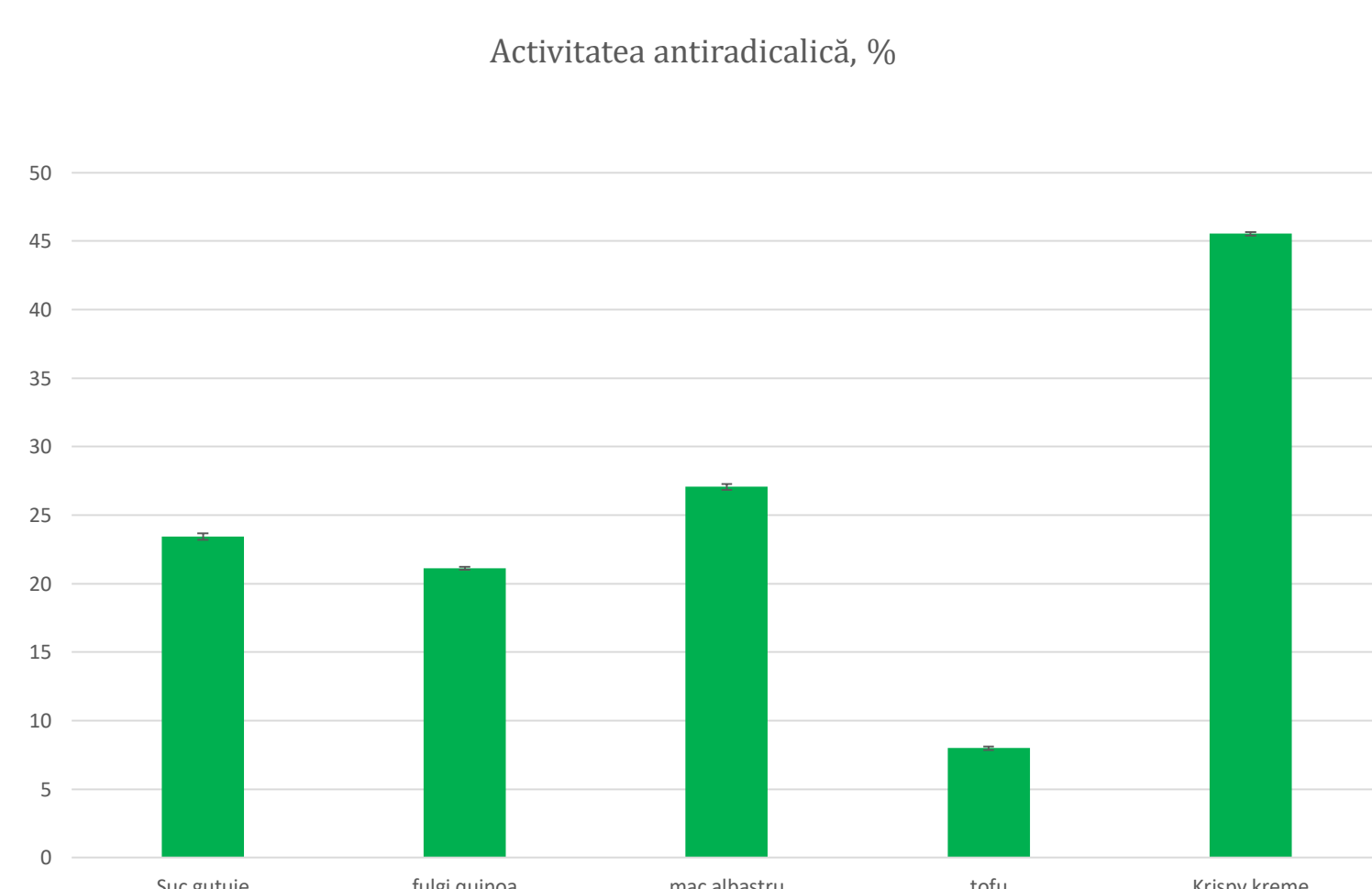


Figure 1 Graphical representation of antioxidant activity

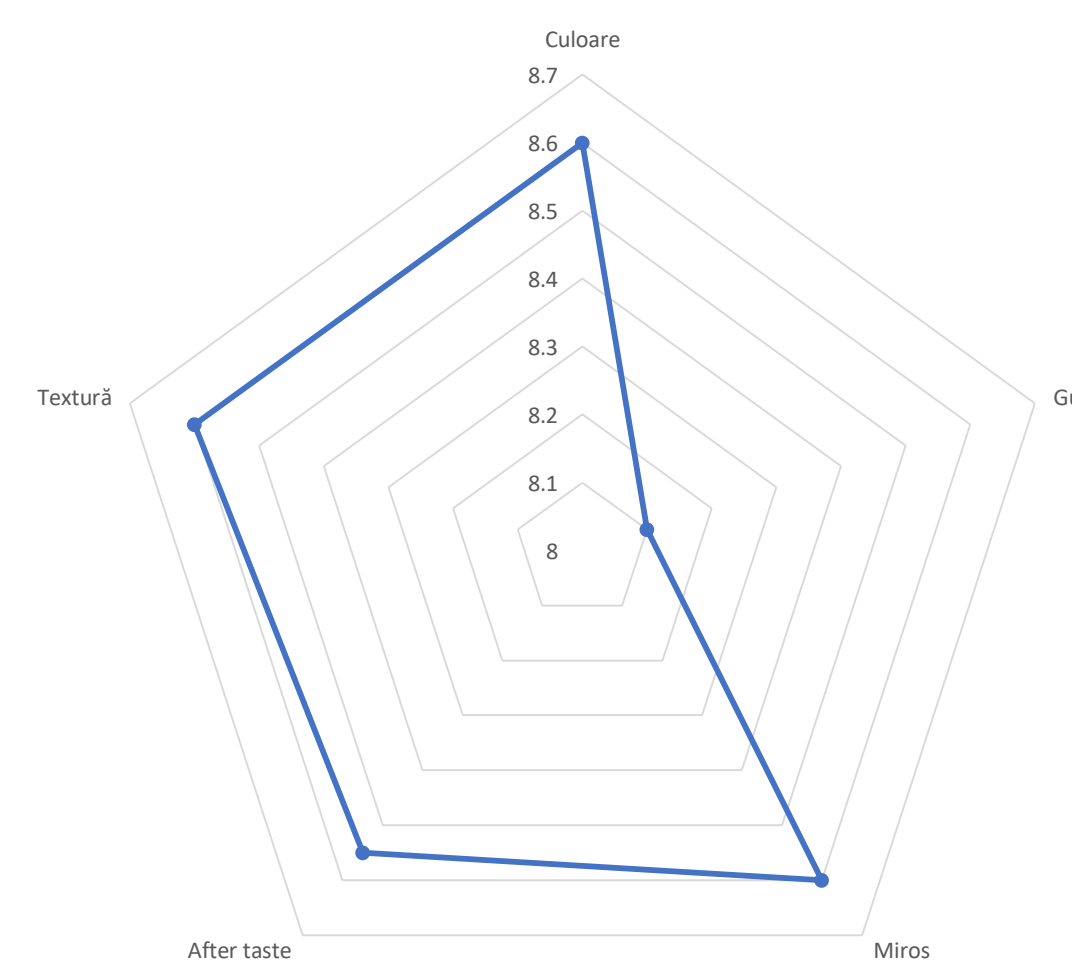


Figure 2 Sensory analysis results

• Conclusions

The resulting product has an improved nutritional profile, with cocoa replaced by carob, dairy products replaced by tofu and coconut milk, and the addition of chia, quinoa, and cranberries. The result is a dessert rich in fiber, antioxidants, omega-3 fatty acids, and plant-based protein, with a potentially lower glycemic index compared to traditional desserts. The resulting dessert confirms that it is possible to create delicious products with a complex texture using only plant-based ingredients, eliminating common allergens such as lactose, cocoa, gluten (by using quinoa in granola), and animal products, proving the viability of the vegan concept.

