

Chia seeds gluten-free products fortified with phytochemicals

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Background and objectives: The value of the food market sector is steadily growing, and interest in it is driven by knowledge of its beneficial effects on the human body. One of the promising representatives of this group are food dedicated to consumers suffering from gluten intolerance. The growing popularity of *Salvia hispanica*, known for thousands of years, is reflected in the number of health-promoting foods available. Chia seeds have a fat content of 25-35%, rich in polyunsaturated fatty acids, do not contain gluten proteins, so they can be used in the preparation of gluten-free meals. Therefore the purpose of the study was to determine the nutritional value and antioxidant activity of gluten-free cookies with the addition of chia seeds.

Methods: A base formulation for gluten-free cookies was developed, which was enriched with chia seeds, egg or water in the necessary amount to obtain the correct dough consistency. Chemical composition analysis included determination of the lipid and fatty acid profile, protein and fiber content (NDF fraction, ADF, ADL, hemicellulose and cellulose). Antioxidant activity (ABTS, DPPH) was determined and sensory analysis of the cookies was carried out. The stability of the product during 3 months of storage was determined.

Results: The enrichment of cookies with chia seeds increased the level of polyunsaturated fatty acids (18:3) in the final product. It was also found that chia seeds can act as an egg substitute in the production of gluten-free cookies, because after hydration they produce a gel that prevents excessive crispness of the cookies. The cookies had varying levels of antiradical activity. The level of peroxide value, which characterizes the degree of oxidation of fats, increased in each sample during storage. Results of the sensory profile evaluation showed that all cookies were evaluated positively in terms of consumer acceptability.

Conclusions: Chia seeds offer high nutritional potential in gluten-free food products formulation.

[Conflict of Interest Disclosure] We declare no conflict of interest.