Evaluation of the chemical and physical properties of gluten-free cookies prepared from chestnut and buckwheat flour

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Abstract

The aim of the study is to produce gluten-free cookies characterized by high quality, high nutritional value, and good physical properties using chestnut and buckwheat flour as flour substitutes. Five different formulations of cookie samples were made using different amounts of two types of flour. The approximate analysis, amount of phenol, antioxidant levels and physical characteristics of the cookie samples were estimated. Results showed that the protein in the flour of buckwheat has a statistically significant higher quantity (12.22%) than the flour of chestnut (6.51%); these results were consistent with the approximate analyzes of cookies. Cookies samples made with a mixture of flours 25% CNF + 75% BWF and 50% CNF + 50% BWF contained higher levels of protein than cookies samples made with only CNF. The percentage of total dietary fiber in the samples of cookies made of 100% CNF, 75% CNF + 25% BWF and 50% CNF + 50% BWF were significantly higher than the other samples. Total phenolic contents were almost similar in all cookies samples. The antioxidant activity was significantly higher in cookies made of 100% CNF and 75% CNF + 25% BWF at (160.4 mg/100 mg) and (154.3 mg/100 mg), respectively. Results of physical properties showed that the spread ratio was significantly lower in cookies samples made from CNF compared to BWF. The hardness indicator was significantly increased with increasing amounts of buckwheat flour. The study concluded that mixing the two types of flours produced gluten-free cookies characterized by high product quality and good properties.

Keywords: chestnut flour, buckwheat flour, gluten-free cookies, alternative flours.