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NUTRITIONAL AND SENSORY IMPLICATIONS OF USING KALE CABBAGE IN PASTRY

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Abstract: *In this study, the possibilities of using kale as an active ingredient in the technology of obtaining puff pastry were pursued. The nutritional and sensory value of the puff pastry with kale filling was determined, and the values obtained were compared with those of some puff pastries made with the addition of white cabbage and spinach. The results obtained indicated that the product contains a significant amount of fiber, primarily due to the presence of kale in its composition (1.88 g/100 g product). The energy value of the product is low (147.92 kcal/100 g product), primarily due to its low carbohydrate content (15.84 g/100 g product) and protein content (2.57 g/100 g product). By comparing the nutritional data of the three analyzed products, it is observed that, in relation to 100 g of product, the highest protein content is found in cheese and spinach-based puff pastry (8.79%), followed by puff pastry with white cabbage filling (3.44%) and kale (2.57%).*

• Introduction

Kale cabbage (Brassica oleracea var. sabellica) is a cruciferous, a member of the Brassicaceae family, formerly known as the Cruciferae. This family encompasses a wide range of vegetables, including cabbage, broccoli, turnips, and cauliflower. Kale is an ancestral member, dating back thousands of years to Greek times. Kale is recognized for its nutritional properties, especially for its high content of B vitamins.

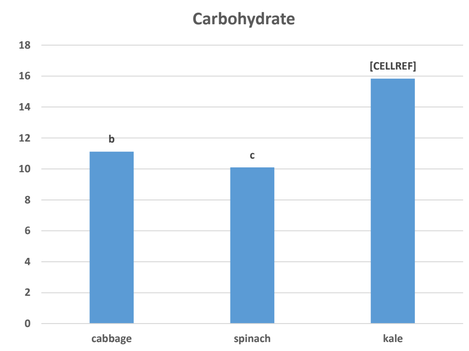
• Material and method

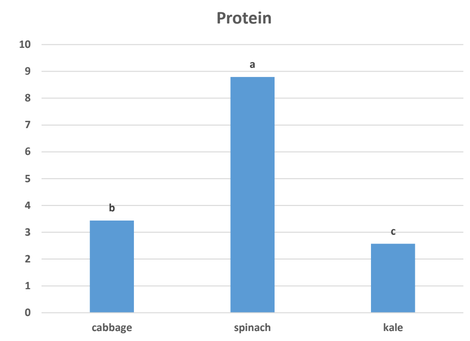
The calculation of the nutritional value was carried out by starting from the nutritional values of the component raw materials and taking into account their respective weights and contributions to the finished product. The nutritional values for each ingredient were extracted from the specialized literature.

• Results and discussions

Duncan test for multiple comparisons found that the mean value of carbohydrates was significantly different between puff pastry filled with: kale and cabbage ($p < .05$, 95% C.I. = [4.253729, 5.1862706]); spinach and cabbage ($p < .05$, 95% C.I. = [0.5537294, 1.486271]); spinach and kale ($p < .05$, 95% C.I. = [5.2567461, 6.223254]).

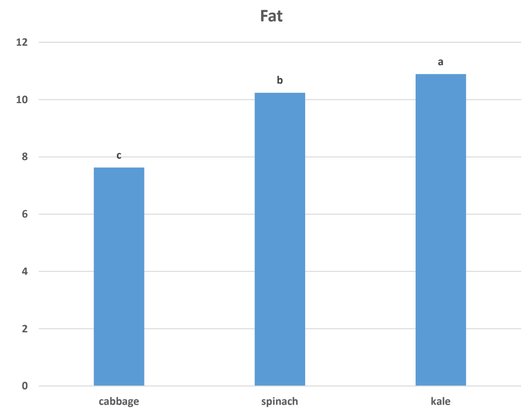
Duncan test for multiple comparisons found that the mean value of protein content was significantly different between puff pastry filled with: kale and cabbage ($p < .05$, 95% C.I. = [0.3697277, 1.370272]); spinach and cabbage ($p < .05$, 95% C.I. = [4.849728, 5.8502723]); spinach and kale ($p < .05$, 95% C.I. = [5.701506, 6.7384940]).

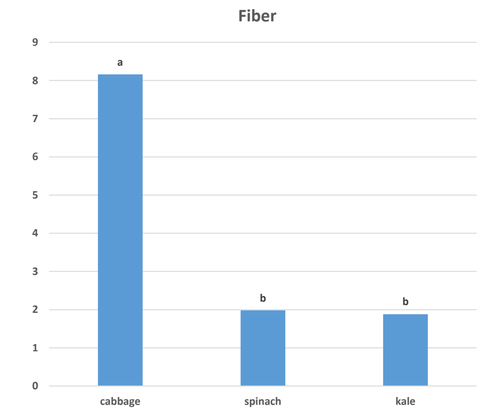




Duncan test for multiple comparisons found that the mean value of fat content was significantly different between puff pastry filled with: kale and cabbage ($p < .05$, 95% C.I. = [2.742334, 3.7776664]); spinach and cabbage ($p < .05$, 95% C.I. = [2.110526 3.1094738]); spinach and kale ($p < .05$, 95% C.I. = [0.1505262, 1.149474]).

Duncan test for multiple comparisons found that the mean value of fiber content was significantly different between puff pastry filled with: kale and cabbage ($p < .05$, 95% C.I. = [5.768863, 6.791137]); spinach and cabbage ($p < .05$, 95% C.I. = [5.686826, 6.673174]).





•Conclusions

Based on the study carried out, the sensory and nutritional analysis of the kale puff pastry obtained, and by comparing it with the nutritional data provided by other similar products, it is recommended to use this vegetable matrix in pastries. These innovative products also serve a functional purpose due to the nutritional elements in their composition, including fiber, calcium, omega-3 fatty acids, and essential fatty acids.