

FORTIFICATION OF COMMERCIALLY AVAILABLE GLUTEN FREE BAKING MIX - ENHANCING PROTEIN CONTENT OF COOKIES

Nikola MARAVIĆ^{1*}, Jelena TOMIĆ¹, Dubravka ŠKROBOT¹, Tamara DAPČEVIĆ-HADNAĐEV¹, Miroslav HADNAĐEV¹



¹University of Novi Sad, Institute of Food Technology, Bulevar cara Lazara 1, 21000 Novi Sad, Serbia

*contact: nikola.maravic@fins.uns.ac.rs



INTRODUCTION

In the population that follows gluten free diet, a lot of complicate immune reactions can occur. The intestinal mucosa can be damaged which can cause inability to absorb nutrients. Furthermore, that can lead to development of a lot of diseases such as anemia, osteoporosis, arthritis, autoimmune and malignant diseases. Gluten free diet is characterized by lower content of vitamins, fibers, minerals, proteins, and imbalanced nutrient content. Addition of chickpea and pumpkin seed oil press-cake flour to commercial gluten free baking mix could have positive impact on nutritive content of obtained final product. That assumption is based on fact that chickpea has high protein content (23-27%), especially lysine, high fibre content and low glycaemic index. On the other hand, pumpkin seed oil press-cake flour contains up to 50% of proteins with favourable amino acid content and is source of fiber and minerals (P, K, Mg, Mn i Ca). Lower content of lysine in pumpkin seed press-cake is compensated with addition of chickpea flour.



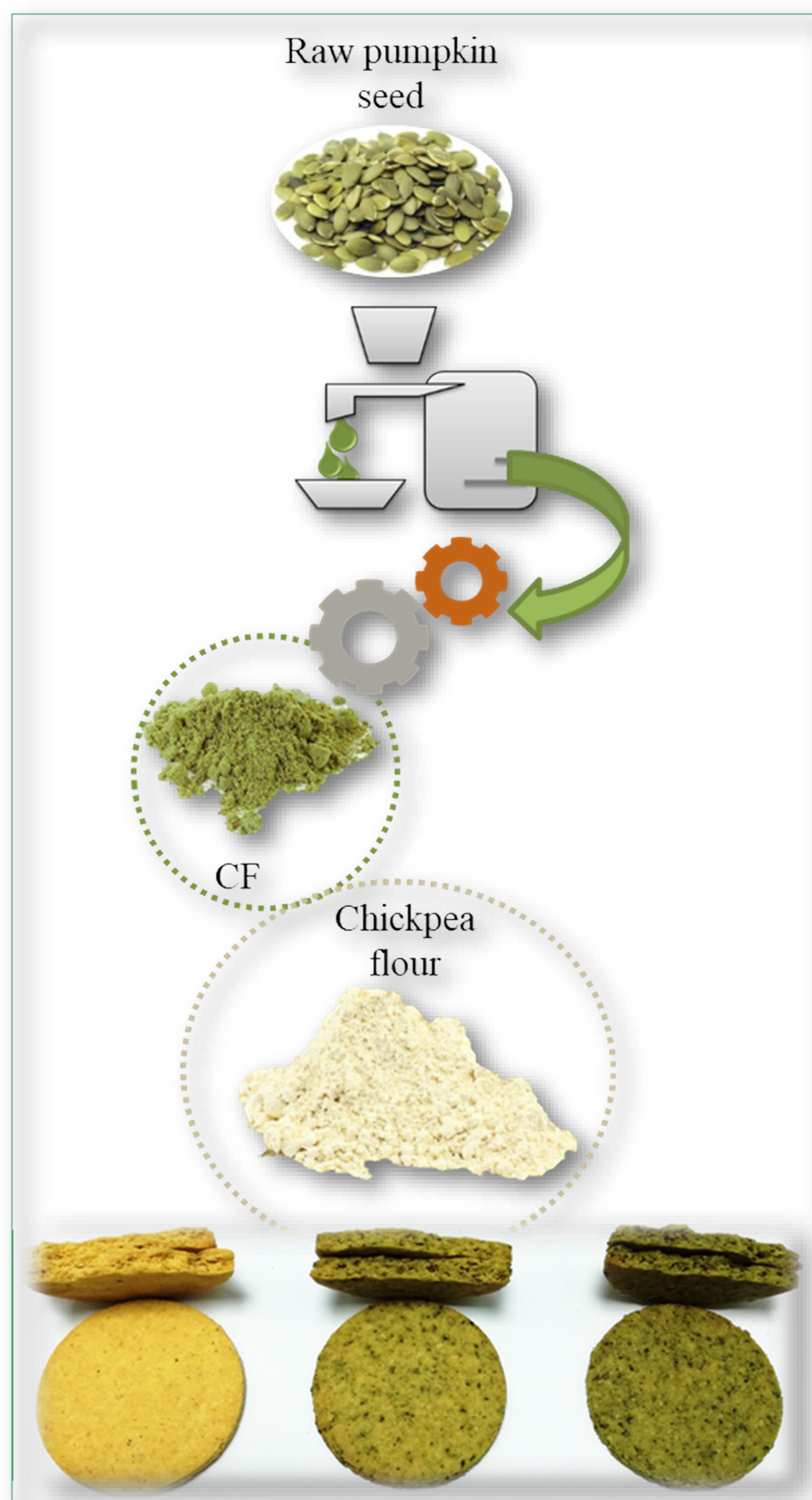
Nutritive profile

Mineral content and fatty acid profile

Proximate composition

Texture profile

Colour and physical properties



RESULTS

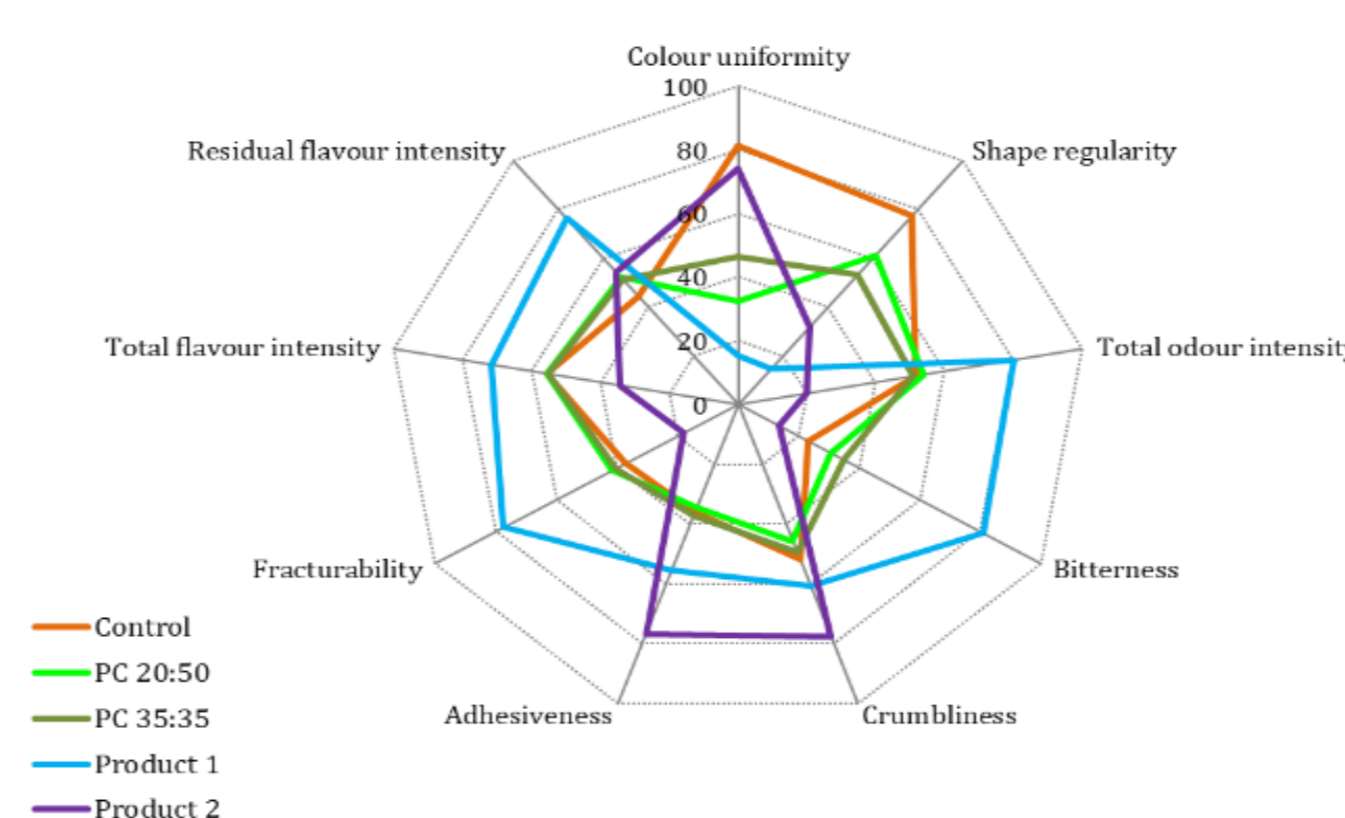


Figure 1. Sensory profile of gluten-free cookies

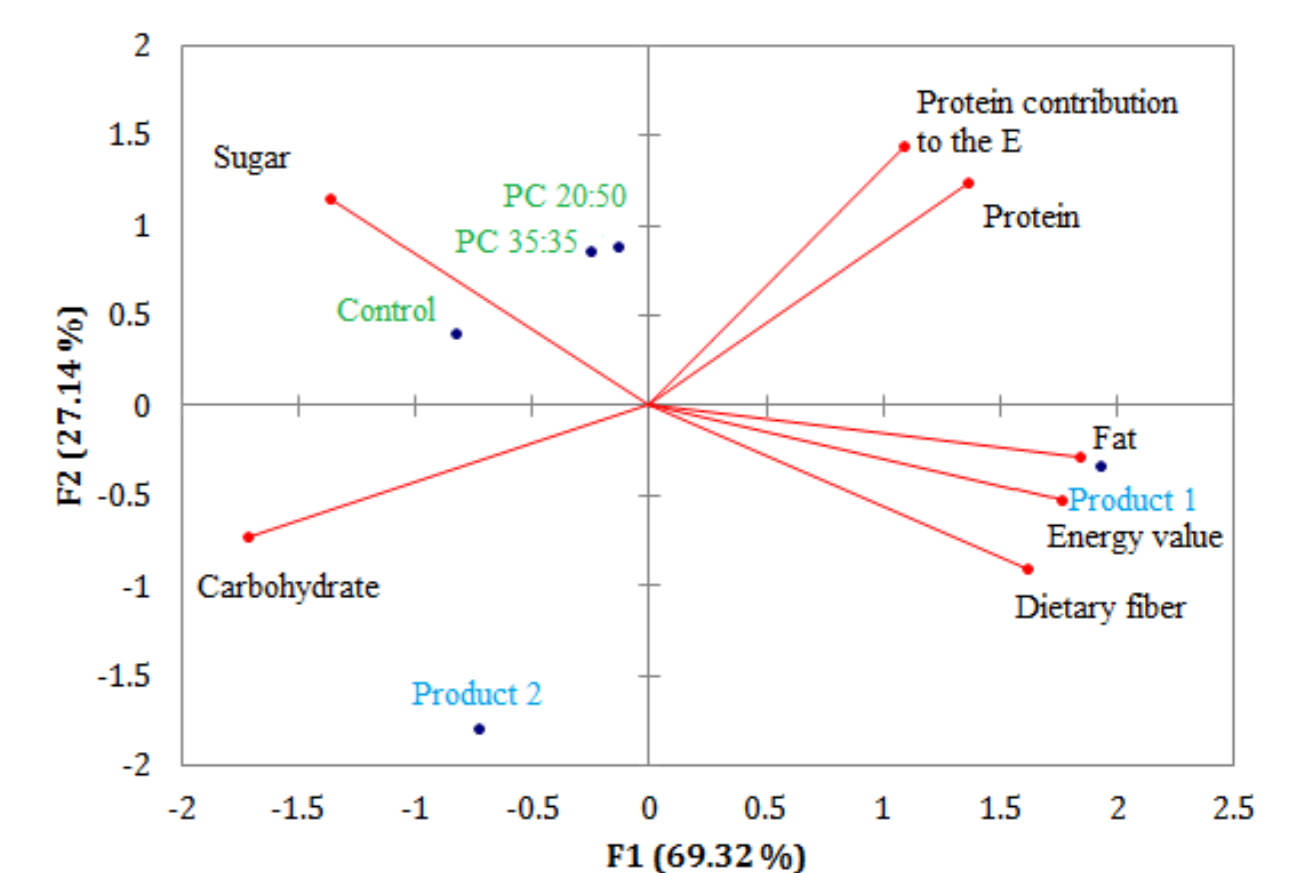


Figure 2. Graphical representation of the position of created cracker samples in PC space in relation to commercially available gluten-free crackers

Parameter	Control	PC 20:50	PC 35:35
Crude protein	12,12 ± 0,06	16,28 ± 0,03	21,89 ± 0,09
Fat	23,37 ± 0,03	25,07 ± 0,03	25,93 ± 0,01
Zasićene masne kiseline	10,16 ± 0,11	10,10 ± 0,21	10,76 ± 0,18
Carbohydrates	56,38 ± 0,11	47,17 ± 0,03	42,27 ± 0,10
Sugar	9,13 ± 0,16	6,36 ± 0,01	6,18 ± 0,26
Fiber	2,96 ± 0,02	3,75 ± 0,06	2,90 ± 0,00
Moisture	2,91 ± 0,03	4,54 ± 0,07	3,04 ± 0,03
Ash	2,26 ± 0,03	3,18 ± 0,04	3,97 ± 0,03
Energetic value	490,25	486,97	495,81

Table 1. Proximate composition of gluten-free cookies

CONCLUSIONS

- Protein content of gluten free mix is fortified by 34% (PC 20:50) and 80% (PC 35:35).
- Fatty acid profile (PUFA/SFA>0.4) and mineral content (Ca, Mg) indicate on balanced nutrition with improved mineral content.
- Overall, addition of pumpkin seed oil press-cake flour contributed to nutritive profile and likeability of products.

