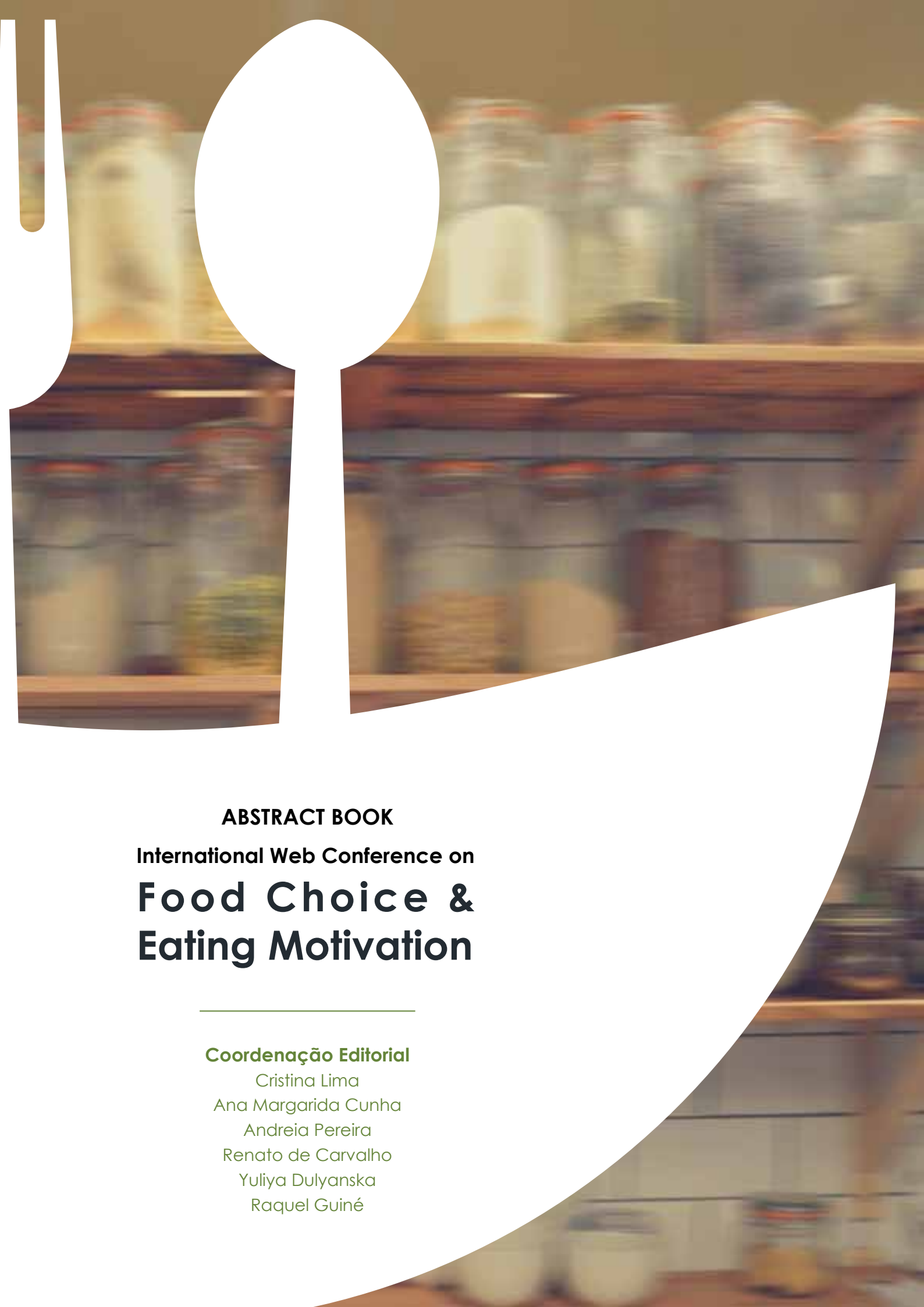

ABSTRACT BOOK

International Web Conference on

Food Choice & Eating Motivation

Coordenação Editorial

Cristina Lima

Ana Margarida Cunha

Andreia Pereira

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Yuliya Dulyanska

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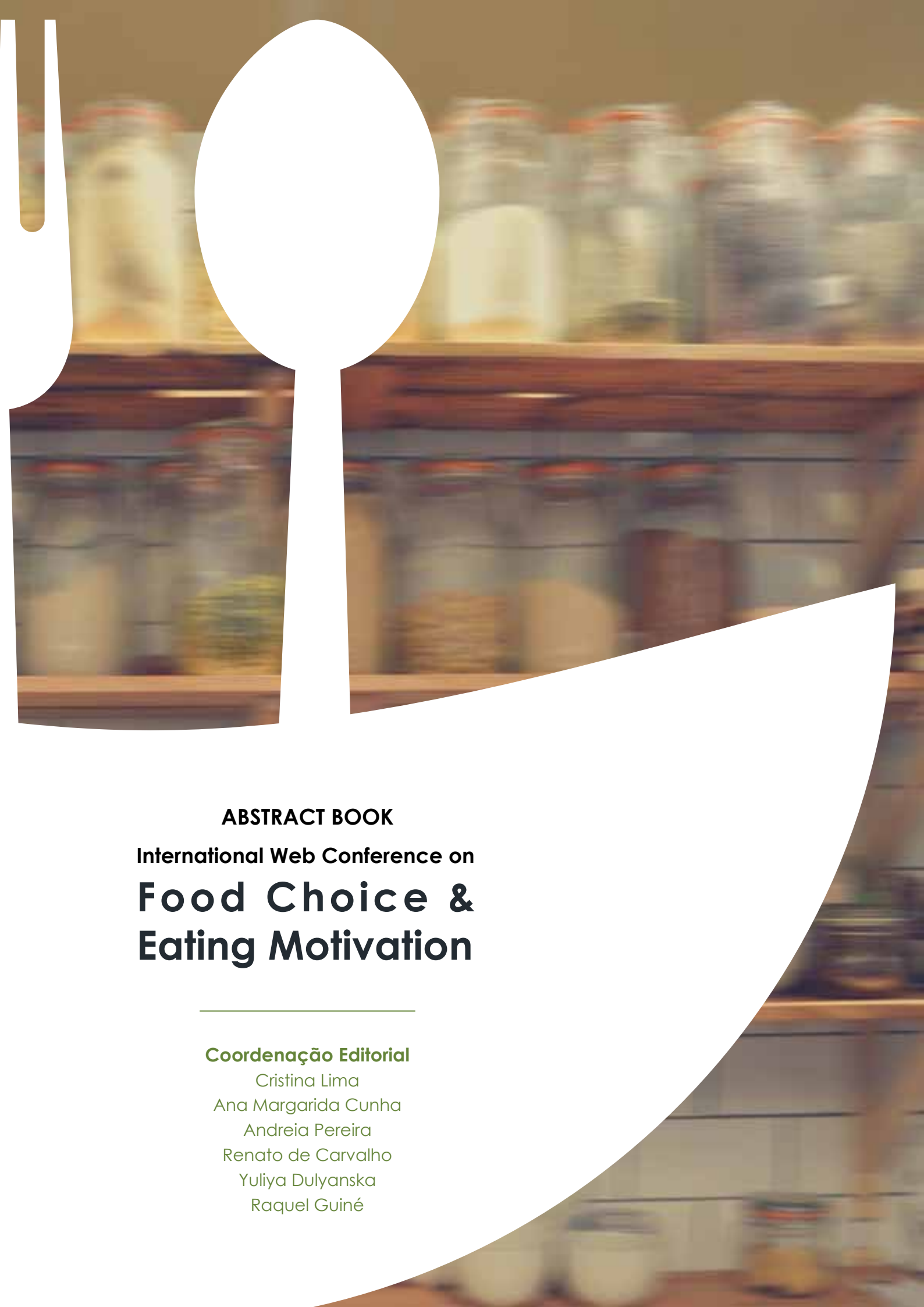

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Big opportunities for tiny seeds: Mineral composition, protein content and sensory properties of gluten-free bread enriched with non-germinated and germinated alfalfa seeds.

BIG OPPORTUNITIES FOR TINY SEEDS: MINERAL COMPOSITION, PROTEIN CONTENT AND SENSORY PROPERTIES OF GLUTEN-FREE BREAD ENRICHED WITH NON-GERMINATED AND GERMINATED ALFALFA SEEDS

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Greater consumer demands for nutritious and healthy foods matching today's lifestyle requirements are the driving force for the development of innovative ingredients with versatile functionalities. This task becomes even more important when it comes to the part of the population with coeliac disease (CD) whose diet is characterised by high input of fat and carbohydrates but low input of dietary fibres, minerals (Ca, Mg, Fe, Zn) and vitamins. Corresponding nutrient deficiencies can further lead to the development of other related diseases compromising the overall well-being of CD patients. Furthermore, other conditions linked to gluten ingestion and a great number of individuals embracing the gluten-free diet as a healthier choice are other reasons for addressing this global challenge.

High nutritional value (rich in proteins, dietary fibres, essential polyunsaturated fatty acids, minerals, vitamins and associated total phenols), absence of gluten, extensive cultivation and availability make lucerne (Medicago sativa L.) or alfalfa seeds an ideal candidate for application in gluten-free bread (GFB) production. However, the presence of antinutrients and beany flavour could limit its use. To tackle these limitations, germination as a natural processing technique is successfully employed enabling also improvements in digestibility of starch and proteins and bioavailability of the other nutrients and bioactive compounds. Considering the presented background, this study aims to explore the effect of non-germinated and germinated alfalfa seeds flour addition (5% on maize flour/starch basis) on GFB mineral composition, protein content and sensory properties (specific volume, external appearance, crumb appearance, smell and taste). Additionally, the aforementioned properties of GFB containing alfalfa were compared with control (without alfalfa) and commercial GFB available on the market.

In GFB containing alfalfa significant increase in Mg (from 342.2 to 908.3 mg/kg), K (from 968.8 to 1478.9 mg/kg) and Zn (from 10.8 to 21.1 mg/kg) content was observed when compared to commercial GFB. However, corresponding bread samples showed lower content of Ca and Fe compared to commercial GFB, but Fe content in GFB containing alfalfa was still higher than in control. Protein content ranged between 4.7 and 6.0 % db and it was higher in GFB containing alfalfa. Control GFB received the highest scores upon sensory evaluation followed by GFB containing germinated and non-germinated alfalfa. Despite the observed volume depressing effect, GFB with alfalfa were characterised by fine taste, soft crumb texture with medium size air pores of good uniformity.

Keywords: Gluten-free bread; Germination; Alfalfa; Minerals; Sensory evaluation

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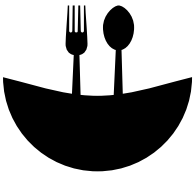

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