

MINERAL PROFILE OF FLOURS AND BLENDS CONTAINING GERMINATED ALFALFA SEEDS

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Abstract

Unlike lentil, chickpea, soybean, lupin and bean, alfalfa (*Medicago sativa* L.) represent an underexplored legume regarding the application in food products intended for human consumption. Despite being abundant in nutrients such as proteins, dietary fibers, essential polyunsaturated fatty acids, minerals, vitamins and associated total phenols, its inclusion in staple food formulations such as bakery products is scarce. A possible explanation for this could be the presence of antinutrients and beany flavor in alfalfa-containing products which hamper its full usage potential. A simple but effective strategy for overcoming this issue and enhancing the nutritional and sensory profile of alfalfa as well as the bioavailability of corresponding compounds is subjection to bioprocessing treatment such as germination. Germination as a naturally occurring process is also considered convenient regarding enhancement of minerals' bioaccessibility and release from bound complexes with antinutritional factors in legume seeds. Therefore, the main aim of this research was to evaluate the mineral profile of non-germinated (ASC) and germinated alfalfa seed flour (GASC). Additionally, examination was performed on white wheat flour-alfalfa blends containing ASC and GASC in different amounts (5 and 10%) intended for the production of bakery products. Analyzed and quantified were micro- (Fe and Zn) and macro- (Na, Ca, Mg and K) elements by means of atomic absorption spectrometer following the ISO 6869:2000 method.

Significantly higher amounts of all analyzed minerals were detected in non-germinated and germinated alfalfa seed flour compared to white wheat flour. Conducted germination altered mineral profile of the alfalfa flour by inducing an increase in Ca and Zn content (58.06 mg/100 g and 3.60 mg/100 g, respectively) with a simultaneous decrease in Mg, K, and Fe content compared to non-germinated alfalfa seed flour. Consequently, a significant improvement regarding mineral profile was also observed in white wheat flour-alfalfa blends. Distinctive were blends containing 10% alfalfa flour, regardless of type, especially when it comes to Fe content which reached 2.30 mg/100 g.

In conclusion, ASC and GASC can be used for mineral profile enhancement of wheat flour, particularly when included in higher amounts (10%).

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