Advances in dairy Research

Extended Abstract

Traditional fermentation of tef injera: Impact on in vitro iron and zinc dialysability

Habtu Shumoy

Abstract

Tef [Eragrostis tef (Zucc.) Trotter], an ancient cereal mainly produced in Ethiopia is increasingly getting higher acceptance in the global market because it is gluten-free and has high iron content. The aim of this study was to evaluate the in vitro dialysability of Fe and Zn in a backstop fermented gluten-free flatbread known as injera. The traditional fermentation caused up to 49-66% reduction of phytic acid (PA). Molar ratios of PA: Fe and PA: Zn decreased from 14 to 1 and from 63 to 19, respectively, after 120 h of fermentation. The total soluble fractions of Fe and Zn ranged between 11 and 38% and between 11 and 29%, respectively, after 120 h of fermentation. The dialyzable Fe content of the white varieties ranged between 3 and 9% after 120 h fermentation while no effect was observed for the brown varieties. The dialyzable Zn ranged between 2 and 11%, with only a clear effect of fermentation in one white variety. Consumption of tef could be a good source of Fe and Zn, but may not provide the absolute recommended daily Fe and Zn intakes.

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Cauliflower waste contains high amounts phenolic compounds, but conventional solvent extraction misses high amounts of nonextractable phenolics (NEP), which may contribute more to the valorization of these waste streams. In this study, the NEP content and composition of cauliflower waste were investigated. The ability of alkaline hydrolysis, sonication, and their combination to release NEP was assessed. Alkaline hydrolysis with sonication was found to extract the highest NEP content (7.3 ± 0.17 mg gallic acid equivalents (GAE)/g dry waste), which was higher than the extractable fraction. The highest yield was obtained after treatment of 2 M NaOH at 60 °C for 30 min of sonication. Quantification and identification were done using U(H)PLC-DAD and U(H)PLC-ESI-MSE. Kaempferol and quercetin glucosides along with several phenolic acids were found. The results of the study show that there are higher amounts of valuable health-promoting compounds from cauliflower waste than what is currently described in the literature.

hose bioavailability is largely modulated by dietary factors. Bioavailability is thus an important aspect when considering the iron and zinc

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Habtu Shumoy
Ghent University, Belgium E-mail: habtu.shumoy@ugent.be