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The inhibitory activity of buckwheat flours fermented with selected lactic acid bacteria on the formation of advanced glycation products

Szawara Nowak Dorota, Topolska J, Majkowska A, Wiczkowski W and Zieliński H

Institute of Animal Reproduction and Food Research of Polish Academy of Sciences in Olsztyn, Poland

The functional properties of buckwheat flour fermented with selected lactic acid bacteria have received increasing attention due to the suggested reduction of coronary heart disease, diabetes and cancer incidence in humans. Advanced glycation end products (AGEs) are a complex group of compounds formed in a non-enzymatic way when reducing sugars react with amino acids of proteins and other protein-derived molecules. Protein glycation in human is believed to be implicated in the development of chronic degenerative diseases. The potential non-pharmacologic prevention of fermented buckwheat flours against formation of AGEs was addressed. In this study the inhibitory activity of buckwheat flours fermented with selected lactic acid bacteria on the formation of AGEs was addressed. Fermentation of 2 types of buckwheat flours (whole meal and thermally treated flours) with selected lactic acid bacteria (*L. acidophilus* (145, La5, V), *L. casei* (LcY, 2K), *L. delbrueckii* subsp. *bulgaricus* (151, K), *L. plantarum* (W42, IB), *L. rhamnosus* (GG, 8/4, K), *L. salivarius* AWH, *Streptococcus thermophilus* Mk-10) was performed in 5% suspension at 37°C during 24 h. The inhibitory activity of methanol-water (67%) extracts obtained from freeze-dried fermented flours was studied in a bovine serum albumin (BSA)/glucose and BSA/methylglyoxal (MGO) model systems whereas aminoquanidine (AG), a commonly used inhibitor of glycation process, has served as a reference compound. The extracts from whole meal and thermally treated buckwheat flours showed inhibitory activity (40% and 31%) as compared to AG (86%) in BSA/glucose system. Fermentation with lactic acid bacteria caused no changes or slight decrease in the inhibitory activity with exception made to *L. rhamnosus* GG and *L. casei* 2K where inhibitory activity of fermented whole meal flour was higher by 20 an 10% as compared to non-fermented one. These findings were not confirmed in BSA/MGO system. Fermentation of thermally treated buckwheat flours caused decrease in the inhibitory activity measured in both model systems.

Biography

Szawara Nowak Dorota has completed her PhD in Food and Nutrition at Institute of Animal Reproduction and Food Research of Polish Academy of Sciences. She has published 29 papers in reputed journals.

d.szawara-nowak@pan.olsztyn.pl

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