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Inhibitory effect of buckwheat derived bakery products on the formation of advanced glycation end products: A comparison study

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The functional properties of traditional and novel innovative buckwheat enhanced wheat and rye products have received increasing attention due to the suggested reduction of total mortality, coronary heart disease mortality, diabetes and cancer incidence in humans. The potential non-pharmacologic prevention of buckwheat enhanced bakery products against formation of advanced glycation end products (AGEs) due to the presence of quercetin-3-O-rutinoside (rutin)-the main buckwheat flavonoid was addressed in this study. AGEs are a complex group of compounds formed in a non-enzymatic way when reducing sugars react with amino acids of proteins and other molecules. Protein glycation in human is believed to be implicated in the development of chronic degenerative diseases. Recently, the protective effect of rutin, the main buckwheat flavonoid and its metabolites has been shown in diabetic rats against formation of AGEs. In this study the inhibitory activity of aqueous alcohol extracts of traditional and novel innovative buckwheat enhanced wheat and rye products against AGEs formation was studied in a bovine serum albumin (BSA)/glucose and BSA/methylglyoxal (MGO) systems whereas amino guanidine (AG), a commonly used inhibitor of glycation process has served as a reference compound. The studies showed a high inhibitory effects of buckwheat enhanced wheat breads, formulated on dark wheat flour and flour from roasted buckwheat groats against AGEs formation offer a potential therapeutic approach for the disease prevention. Moreover, the inhibitory effects of extracts from rye-buckwheat ginger cakes supplemented with low and high rutin dosages was confirmed. The results of the inhibitory activity were highly correlated in two applied model systems.

Biography

Henryk Zielinski is the Head of Department of Chemistry and Biodynamics of Food at IAR&FR PAS. He has completed MSc in chemistry from Nicolaus Copernicus University in Torun, PhD in Biochemistry from University of Warmia and Mazury in Olsztyn, Professor in Food Technology and Nutrition from Polish Academy of Sciences and Postdoctoral studies from Rayne Institute, UMDS London and King's College London. He has published more than 100 papers in reputed journals and has been serving as an Editor-In-Chief of Polish Journal of Food and Nutrition Sciences. He is Polish delegate to Food Chemistry Division at EuCheMS.

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