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Study of the efficacy of probiotic bacteria to reduce process-induced toxicant-acrylamide

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Human exposure to various potential food contaminants or process-induced food toxicants has an increasing public health concern. Acrylamide is one of the process-induced toxicants that is formed when foods, especially those with high carbohydrate and rich in asparagine, are cooked at high temperature of 120°C or above in the presence of reducing sugar particularly glucose and fructose in Maillard browning reaction. The presence of acrylamide in food arose the public health concern due to its potential carcinogenicity and genotoxicity. In this study, the new approach to reduce acrylamide by probiotic bacteria was investigated. Two major food groups, potato chips and soda crackers, contain relative high acrylamide levels were selected as food samples. The content of acrylamide in selected potato chip and soda cracker samples were analyzed by Liquid chromatography–Mass spectrometry with Solid Phase Extraction (SPE) clean-up. Three *Lactobacillus* strains-*Lactobacillus casei*, *Lactobacillus acidophilus* and *Lactobacillus rhamnosus* were selected for investigating the effect of reducing acrylamide. The result showed that the acrylamide content in potato chip and soda cracker samples were reduced after incubation with different *Lactobacillus* strains. *Lactobacillus casei* had exhibited the highest capability in reducing acrylamide in selected samples. The % reduction of acrylamide by three *Lactobacillus* strains in potato chip samples ranged from 43.80-23.67% while in soda cracker samples ranged from 20.23-9.50%. The results demonstrated that the acrylamide-reducing capacity of selected probiotic strains was different under different food matrix, probably due to different food composition and processing treatment.

Recent Publications

1. S M Choi and C Y Ma (2007) Structural characterization of globulin from common buckwheat (*Fagopyrum esculentum Moench*) using circular dichroism and Raman spectroscopy. *Food Chem.* 102:150-160.
2. S M Choi and C Y Ma (2006) Study of thermal aggregation of globulin from common buckwheat (*Fagopyrum esculentum Moench*) by size-exclusion chromatography and multi-angle laser light scattering. *J. Agric. Food Chem.* 54(2):554-561.
3. S M Choi, Y Mine and C Y Ma (2006) Characterization of heat-induced aggregates of globulin from common buckwheat (*Fagopyrum esculentum Moench*). *Int J. Biol. Macromol.* 39:201-209.
4. S M Choi and C Y Ma (2006) Extraction, purification and characterization of globulin from common buckwheat (*Fagopyrum esculentum Moench*) seeds. *Food Res. Int.* 39:974-981.

Biography

Siu Mei Choi has completed her Graduation with a Bachelor of Science degree in Food and Nutritional Science and Doctor of Philosophy degree in Food Science at the University of Hong Kong; Master degree in Food Safety and Toxicology at the same University. She is currently an Assistant Professor in the Department of Food and Health Sciences at Technological and Higher Education Institute of Hong Kong (THEI). She is also the Honorary Treasurer of the International Food Safety Association (IFSA).

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