



2019

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

Siu Mei, Emily Choi

Faculty of Science and Technology, Technological and Higher Education Institute of Hong Kong, Vocational Training Council, dremilychoi@thei.edu.hk

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Recommended Citation

Choi, S. (2019). Study of the efficacy of probiotic bacteria to reduce process-induced toxicant -acrylamide. *10th International Food Safety and Regulatory Measures Conference*. Retrieved from <https://repository.vtc.edu.hk/thei-fac-sci-tech-sp/525>

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Conference

Poster Presentation at 10th International Food Safety and Regulatory Measures Conference to be held during May 23-24, 2019 at Zurich, Switzerland

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

SIU MEI CHOI, Department of Food and Health Sciences, Faculty of Science and Technology, Technological and Higher Education Institute of Hong Kong, Hong Kong.

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 analysed 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 resulted 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.

Presenting author details

Full name: Dr SIU MEI CHOI

Contact number: +852 2176 1495

Email address: dremilychoi@vtc.edu.hk

Acknowledgement: This work was supported by RGC funding (UGC/FDS25/M01/17).