D6-5

Origin Authentication of Pork by Stable Isotope Ratios Analysis Using IR-MS

Kyong Su Kim*, Ji Yeon Choi, Eun Yeong Nho

Department of Food and Nutrition, Chosun University, Korea

Authentic and objective food information has been a major concern of many consumers around the world and it is still gaining importance. In the recent past several attempts have been made for origin authentication of animals used as food. This study was aimed at application of the stable isotope ratios analysis for origin authentication of pork. A total of 286 samples with 150 from Korea and 136 imported from 11 countries of America and Europe were collected from markets all over South Korea. These were analyzed for stable isotope ratios of carbon ($\delta^{13}C‰$) and nitrogen ($\delta^{15}N‰$), using Isotope Ratio-Mass Spectrometry (IR-MS). Significant variations were observed in the results related to the origin of samples which may be due to the specific feeding styles of the pork in each country. From the studied regions, the values of $\delta^{13}C‰$ were found in the decreasing order of: America (-14.98±1.02‰)>Korea (-19.94±0.98‰)>Europe (-25.67±1.47‰); while for $\delta^{15}N‰$ the order was: America (5.13±0.68‰)>Europe (4.72±0.58‰)>Korea (3.78±0.73‰). There was slight variation of values among countries in each region studied. The two dimensional graphical display of the results lead us to conclude that the stable isotope ratios analysis give enough information about the origin and is therefore a possible means for origin authentication of pork.

D7-1

Nutritional Enhancement of Soymilk via Bioconversion and Bioprocessing

Nagendra P. Shah

Food Science and Technology Food and Nutritional Science, School of Biological Sciences, The University of Hong Kong, Hong Kong

This presentation will highlight bioconversion of predominant isoflavone glycosides to bioactive aglycones using endogenous enzyme from selected probiotics and exogenous β-glucosidase and the effects of ingesting an isoflavone aglycone-enriched fermented soymilk containing viable *Bifidobacterium* on serum lipid profiles and Lp(a), levels of FSH, LH and SHBG and bone resorption in postmenopausal women. Biotransformation of isoflavone glycosides into aglycones correlated with the glycolytic activity of the enzymes during fermentation. However, β-glucosidase activity was found to be 15 fold greater than that of β-galactosidase in all microorganisms. The bioactive aglycone concentration in the soymilk with certain probiotic organisms increased by 5 to 6 fold after 15 h of fermentation at 37ºC, coinciding with peak activities of the two enzymes. Comparatively, the aglycone concentrations in the soymilk with selected microorganisms were much lower after 4 h of fermentation at 37ºC. Results from stability of isoflavones showed that aglycone forms had smaller degradation compared to glycosides at all storage temperatures. Specifically, aglycones had smaller degradation at lower storage temperatures (4 and -80℃) than at higher temperatures (24 and 37℃). Glycoside genistin was least stable at all storage temperatures compared to other isoflavones, while aglycone daidzein was the most stable. From clinical trials, fermented and non-fermented soymilk group showed small and insignificant increases in SHBG compared to the placebo group. Despite the lack of hormonal effects, women consuming fermented soymilk showed improvements in HDL-cholesterol and a large reduction in the urinary excretion of bone resorption marker DPD than the non-fermented soymilk and the placebo. Additionally, there was a trend toward a reduction in Lp(a) in women consuming fermented soymilk. The results indicated that isoflavone aglycone-enriched fermented soymilk may be more effective in protecting against bone loss in postmenopausal women.