

Poster Session 4

Products from Microbial and Animal Origins

P4.1. Influence of chicken genotypes, sexes and types of meat on carnosine extracts and their antioxidant activities

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Carnosine (β -alanylhistidine) is a functional compound found in skeletal muscle of vertebrate animal, which plays a role in physiological functions, intracellular pH-buffer and inhibiting oxidation. It was found to be an essential compound in chicken essences that promoted the recovery from fatigue in mental arithmetic test. In general, carnosine contents depend on breed, sex and age of animal. Therefore, the objectives of this study were to investigate carnosine contents in 3 different chicken genotypes, i.e. indigenous Thai native, 4-lines and 5-lines cross breed chickens and compare between the sexes of chickens, and elucidate antioxidant efficacy of carnosine-containing extracts obtained from those meats. To produce carnosine-containing extracts, breast and thigh meats were extracted by water, heated at 80°C and subsequently passed through ultrafiltration, 5,000 molecular weight cut off. Fresh meats and the extracts were determined for carnosine, protein and total iron contents. Antioxidant activities of extracts were evaluated by TBARS method as considered in term of carnosine concentration (mM) used to inhibit oxidation by 50% (EC_{50}). Carnosine contents in fresh meats and in the extracts were different among genotypes ($p < 0.01$) and between sexes ($p < 0.01$) of chickens. Breast contained 2-4 fold higher carnosine content than thigh meats. Higher carnosine contents were found in female than in male meats. Similar results of carnosine contents were found in the extracts. Antioxidant activities of the extracts increased with increasing of carnosine in oxidation system. Considering the activity by EC_{50} , all extracts showed remarkably greater activities (0.79-1.81 and 0.25-0.54 mM for breast and thigh extracts, respectively) than that of pure carnosine (15.63 mM) in oxidation system. Although higher in total iron contents, carnosine extracts from thigh meats showed greater antioxidant activities. In conclusions, carnosine contents in fresh meat and their extracts obtained were similar. Differences among genotypes and sexes of chickens were found. The carnosine-containing extracts of chicken meats exhibited greater antioxidant activities than pure carnosine, thus they should be considered as highly efficient natural antioxidant for use in food products.

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