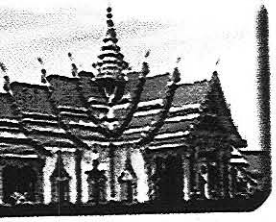
10th World Congress on Clinical Nutrition

ion in the Next Decade: Nutraceutical/Functional Food: Product Performancein Health, Disease and Safet

ROGRAMS AND ABSTRACTS



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S4.15. Extraction and antioxidant efficacy of carnosine extracts from broiler meats: Heat treatments, ultrafiltration and antioxidant activities

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Carnosine (β-Alanyl-L-Histidine) is a natural antioxidant in skeletal muscle with a role as an excellent metal chelator and free radical scavenger. Utilization of synthetic carnosine as a food additive is limited by economy. Therefore, many studies investigated the extraction of carnosine from natural sources, such as pork and beef which have high amounts of iron compounds. Chicken meats with lower iron-containing compound were used as a carnosine source in the experiment. The purposes of this study were to investigate the extraction of carnosine from breast and thigh broiler meats, and to determine antioxidant activities of the extracts. Carnosine was extracted by water and partially purified by heat treatment at 60, 80 and 100°C, and separation of low molecular weight (MW) iron compounds by ultrafiltration (UF), 5,000 MW cut off. Carnosine, protein and total iron contents of all extracts were determined. The antioxidant activity of extract was measured by TBARS method and considered as carnosine concentration (mM) in system that could reduce oxidation by 50% (EC50). With increasing extraction temperatures, protein content decreased, whereas carnosine and total iron contents and antioxidant activities increased. Carnosine contents of heated extracts were 33, 200.85-40,380.13 ppm for breast and 12,918.65-14,104.50 ppm for thigh. There were no difference between extraction at 80oC and 100oC in carnosine, protein and total iron contents. However, 80°C- had lower iron content than 100°C-extract. Therefore, 80°C-extract was further subjected through UF. The UF permeate (UFP) had 20% carnosine higher, but 40% protein and 10-30% total iron contents than that of 80oC-extract. Antioxidant activities by of breast- and thigh- UFP by EC50 were 2.25 and 0.67 mM, respectively, which were greater than pure carnosine (15.45 mM). UFP had lower activity even when it contained higher carnosine and lower iron contents ($p<0.05$) than that of 80°C-extract due to loss of synergistic compounds through UF process. In conclusion, carnosine-containing extract could be produced from chicken meat. Heat treatment and UF were effective to remove other proteins and iron compounds, respectively. Antioxidant activities of chicken extracts were obviously greater than that of pure carnosine. Therefore, chicken meat should be a good alternative source of carnosine for use in food products.