

Reduction of Tumbling Time and Improvement of Shear Value for the Manufacture of Restructured Hams using Transglutaminase

Hong C. Lee* and Koo B. Chin

Meat Science Lab., Dept. of Animal Science,
Chonnam National University, Gwangju, Korea

Restructured meat products (RMPs) can be manufactured with a variety of raw meat materials and new processing technologies, and formed any shape and size desired. It would be more profitable if we can manufacture RMPs with improved binding capacity and reduced processing time. Thus, the objective of this study was to reduce the tumbling time with improved binding capacity for the manufacture of restructured hams (RHs) using a transglutaminase (TGase). Pork hams were cut into 1 inch-cubes and mixed with brine solution (20%) for 30 min in a food mixer. Then the mixture, which included soy protein isolate as a substrate for TGase, tumbled with other curing ingredients from 1 to 4 hrs. The mixed 5 kg batches with or without TGase were stuffed into fibrous casings (90 mm, dia), put into a refrigerator ($5\pm 1^{\circ}\text{C}$) for at least 2 hrs for enzyme reaction. Then, chubs were cooked to an internal temperature of 72°C , showered with cold water and moved to a cooler overnight. pH, chemical composition, water activity (A_w), cooking yield (CY, %), hunter color values (L, a, b), textural profile analysis, shear values and microbial counts were determined. The RHs had 74-76% moisture, 3-5% fat, 18-20% protein with pH values of 5.9-6.1 and water activity of 0.95-0.96. RHs without TGase had lower ($P<0.05$) textural profile analysis (TPA) values than those with TGase, regardless of tumbling time which could not be critical for TPA values. Improved shear values were observed with increased tumbling time only in RHs without TGase. This study indicated that the addition of TGase in the manufacture of RHs improved the textural characteristics and reduced the tumbling time, resulting in similar shear values of control which tumbled for 4 hrs without TGase.