

Proteins as Potential Indicators to Determine Endpoint Cooking Temperature of
Frozen GroundPork Hams as Affected by Addition of Salt and Sodium
Triphosphosphate and Various Cooking Temperatures

Sang Mi Kang^{*}, Soo Hyun Cho¹, Koo Bok Chin

Meat Science Lab. Dept. of Animal Science,

Chonnam National University, Gwangju, Korea

¹National Livestock Research Institute, Suwon, Korea

Meat enzymes, such as lactate dehydrogenase(LDH), have been used for potential indicators to determine endpoint cooking temperature (EPT). Other meat proteins or enzymes, which decreased markedly in the range of cooking temperature, might be considered as potential indicators to verify EPT. In addition, frozen pork ham might affect the protein solubility and protein fractions. Thus, the objective of study was to screen pork protein profiles extracted from ground pork hams stored -30°C for 2 weeks and determined whether they were affected by salt and sodium triphosphosphate (STPP) combinations, and various cooking temperatures ($64\sim 74^{\circ}\text{C}$). After thawed, ground pork hams containing the combination of sodium chloride (0%, 2%) and sodium triphosphosphate (0, 0.5%) were mixed thoroughly and cooked to an internal temperature ranging from 64 to 74°C with 2°C increments. Cooking loss (CL, %), protein solubility (PS) and sodium dodecyl sulfate-polyacrylamide gel electrophoresis (SDS-PAGE) technique were performed. As cooking temperature increased, CL (%) increased as well, however PS decreased, regardless of the addition of salt and STPP. CL (%) was reduced with the addition of salt and STPP, however PS was increased by the addition of STPP alone. No CL was determined in a ground pork containing 2% salt and 0.5% STPP combination. Minimum changes of PS was found in the cooking temperatures higher than 70°C . SDS-PAGE profiles revealed 12 protein fractions at the raw state (22°C), and appeared approximately 8 protein bands at 64°C . Protein fractions containing molecular weights(MW) of 65 and 36 kDa were significantly reduced at $66\text{-}70^{\circ}\text{C}$ in a control (no salt and STPP). The addition of salt affected protein profiles, resulting in decreased EPT of those protein fractions, as compared to a control. Thus, these protein fractions might be considered as potential indicators to verify EPT of frozen ground pork hams.