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# Fat Reduction in Processed Meat Using Hot-Boning and Cold-Batter Mincing Technology

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## Objectives

Processed meats have high fat contents that have been linked to adverse effects on human health. The purpose of this study was to generate low-fat meat products using the combination of hot-boning (HB), crust-freeze-air-chilling (CFAC; HB-CFAC), and cold-batter mincing technologies.

## Materials and Methods

Twelve commercial pigs (4 pigs/replication) were obtained locally and processed in a traditional way. Skinless, boneless, fresh pork ham (IMPS#402G) was harvested and subjected to either hot-boning (HB) at 1-h poste-mortem or chill-boning (CB) at 24 h post-mortem. All pork ham muscles were cut into one-inch wide strips and subjected to crust-freeze-air-chilling (CFAC). The resulting strips were 3-min pre-chopped and 6-min post-chopped for full-fat batters (FF), using 65% ham muscle of CFAC, 15% pork back-fat, 16% ice, 2% salt, and 2% starch. For low-fat batters (LF), the strips were similarly chopped with the same ingredients except 0% pork back-fat and 31% ice. Data in three replications were evaluated by one-way ANOVA, using PASW 18 statistic program and a completely randomized design. A post-hoc analysis was performed using Duncan`s multiple range test to evaluate differences of fat content and protein functionality among treatments at $P < 0.05$.

## Results

After chilling, the pH 6.27 of HB-loin muscles at an hour post-mortem was significantly higher than that pH 5.63 of CB-loin muscles at 24 h post-mortem ($P < 0.05$). Similarly, the pH 6.0 of cooked HB-gels was higher than the pH 5.7 of cooked CB-gels, regardless of fat content ($P < 0.05$). The 65% moisture and 11– 12% fat in full-fat gels (HB-FF and CB-FF) were lower and higher, respectively, than 76– 78% moisture and 1.6– 3.0% fat in low-fat gels (HB-LF and CB-LF), regardless of boning type. Cooking yield (%) was improved in HB-gels more than CB-gels. In responding to the cooking yield, the lowest and the highest expressible moistures were found in HB-FF gels and CB-LF gels, respectively. Both HB-FF and HB-LF gels showed higher values for hardness, cohesiveness, and gumminess than CB-FF gels, with the least value found in CB-LF gels. These results indicated that the cold-batter mincing of HB-muscles provided higher protein functionality and gel-forming ability than that of CB-muscles so that fat was reduced without textural quality loss ($P < 0.05$). The next step of this research is to generate fatty/creamy-like texture by chopping low-fat ham muscles at sub-zero temperatures for extended times, resulting in small and uniform protein particle sizes.

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