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Fresh Ham Chop Characteristics Cooked to Various Internal Endpoint Temperatures

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Objectives

Today's health conscious consumer perceives pork as a healthy, low fat food staple. Identifying alternative fresh pork options within ham muscles could potentially increase carcass value. Therefore, the objective of our research was to evaluate fresh and cooked characteristics of pork *m. biceps femoris* (BF) and *m. semimembranosus* (SM).

Materials and Methods

Pork BF and SM were evaluated for quality characteristics once cooked to 62, 68, or 73°C endpoint temperatures. Ham ($n = 27$) subprimals were cut into 2.54cm chops and allocated randomly to cook loss (CL), Warner-Bratzler shear force (WBSF), pH, and instrumental cook color (ICC) analyses. Chops assigned to CL and WBSF were weighed raw, cooked to treatment temperature, cooled to 23°C, and weighed again to calculate CL. Shear force was calculated from six 1.27-cm-diameter cores taken parallel to the muscle fiber orientation using a manual cork borer. Each sample was sheared once in the center with a Warner-Bratzler compression 60° angle V-notch cutting blade attachment on an Instron Universal Testing Machine. Intramuscular pH readings averaged 3 reading using a glass pH probe. Instrumental cook color was evaluated when chops reached room temperature. Chops were sliced horizontally, and color readings were taken immediately across the exposed surface. Readings were measured using a Hunter MiniScan EZ. The lightness (L*), redness (a*), yellow (b*) and red to brown ratio (R:B) values were determined from the mean of 3 readings on the surface of each chop.

Results

Data were analyzed using the MIXED procedure of SAS (SAS Inst. Inc., Cary, NC) with significance declared at $P \leq 0.05$. Cook loss was the greatest ($P < 0.01$) in SM and both CL and WBSF values increased ($P < 0.01$) when endpoint temperature increased. Chops cooked to 73°C were 7.59 and 10.34% tougher compared to 62 and 68°C, respectively. There was a muscle × temperature interaction ($P = 0.04$) for L* as SM was lighter at 68 and 73°C compared to SM at 62°C and BM at any endpoint temperature. Biceps femoris was redder and expressed a greater R:B ratio ($P < 0.01$) compared to SM. Additionally, chops cooked to 62°C had the greatest a* and R:B values ($P < 0.01$). There was a muscle × temperature interaction ($P < 0.01$) for b* where BF was more yellow at 73°C compared to BF at 62°C and SM at 68°C. Although pH was not affected ($P = 0.56$) by treatment, it is important to note that the mean pH values were 5.93 and 5.89 for BF and SM which is indicative of dark, firm, and dry meat and could have affected the outcomes for color analysis.

Conclusion

The authors conclude that 68°C would be the optimal endpoint temperature because chops cooked to 73°C had greater shear force and CL values which would results in a tougher product. Chops cooked to 62°C had greater a* and R:B values compared to those at 68°C and would be less appealing to consumers according to previous studies.

