

Analysis on consumer's evaluation of pork appearance depending on the pork cuts

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Introduction: Meat quality, especially appearance, has become a more important factor that considerably influences consumers' purchasing choice. Previous studies reported that visual factors such as color, fat cover, and marbling affected consumers' decision making of pork purchase [1-3]. Although the effect of those visual cues varied depending on the regional or cultural background [4] and the pork cuts [5-6], the difference between consumer's evaluation of different pork cuts has not been studied. Therefore, the objective of this study was to investigate how visual quality factors (meat color, visible fat proportion, and fat distribution) influence consumer's preference for different pork cuts.

Materials and methods: Images of slices from pork Boston butt, loin, and belly were chosen based on CIE coloration and visual fat proportion, and then used for online survey to analyze consumer's perception on appearance of each pork cut. A total of 211 South Korean consumers were selected considering age, sex, and place of residence, and they replied to the online survey. Respondents evaluated each visual quality factor [color (lightness and redness), visible fat proportion, and fat distribution] and expressed their preference on visual traits of images from each pork cut. Pearson correlation coefficient (r^2) was analyzed to figure out the relationship between visual quality factors and preferences.

Results: Respondents' assessment on meat redness, visible fat proportion, and fat distribution of three pork cuts were significantly different. Preference on fat distribution and overall acceptability were also significantly different among three pork cuts. Correlation analysis of visual traits and preference indicated that the effect of visual quality factors on appearance preference varied depending on the pork cuts. In case of Boston butt, overall acceptability was highly correlated with fat preference ($r^2 = 0.7$, $p < 0.0001$), and moderately correlated with meat lightness, fat distribution, and meat color preference ($r^2 = 0.5$, 0.5 and 0.6 , respectively, $p < 0.0001$). Overall acceptability of loin was highly correlated with fat preference ($r^2 = 0.8$, $p < 0.0001$), and moderately correlated with fat distribution and meat color preference ($r^2 = 0.5$ for both, $p < 0.0001$). For pork belly, it turned out that overall acceptability had highly positive correlation with fat distribution and fat preference ($r^2 = 0.8$ and 0.9 , respectively, $p < 0.0001$), and unlike other pork cuts, it had negative correlation with visible fat proportion ($r^2 = -0.3$, $p < 0.0001$). Considering the fact that Korean consumers used to prefer pork with high fat proportion, this result may reflect recent trend toward pork belly with less fat due to health concern.

Conclusion: In this study, both visible fat proportion and fat distribution, rather than meat color, were more influential on overall acceptability, regardless of the pork cut. However, the impact of visual quality factors on consumer's evaluation was different depending on the pork cuts, and this result indicated that consumer's expectation on the ideal appearance of pork cut was affected by the type of cuts.

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Literature:

- [1] Carpenter, C. E., Cornforth, D. P., & Whittier, D. (2001). Consumer preferences for beef color and packaging did not affect eating satisfaction. *Meat Science*, 57(4), 359-363.
- [2] Ngapo, T. M., Rubio Lozano, M. S., & Braña Varela, D. (2018). Mexican consumers at the point of meat purchase. *Pork choice*. *Meat Science*, 135, 27-35.
- [3] Papanagiotou, P., Tzimitra-Kalogianni, I., & Melfou, K. (2013). Consumers' expected quality and intention to purchase high quality pork meat. *Meat Science*, 93(3), 449-454.
- [4] Ngapo, T. M., Martin, J. -F., & Dransfield, E. (2007). International preferences for pork appearance: I. Consumer choices. *Food Quality and Preference*, 18(1), 26-36.
- [5] Arkfeld, E. K., Wilson, K. B., Overholt, M. F., Harsh, B. N., Lowell, J. E., Hogan, E. K., ... Boler, D. D. (2016). Pork loin quality is not indicative of fresh belly or fresh and cured ham quality. *Journal of Animal Science*, 94(12), 5155-5167.
- [6] Knecht, D., Duziński, K., & Jankowska-Mąkosa, A. (2018). Pork ham and belly quality can be estimated from loin quality measurements? *Meat Science*, 145, 144-149.