



The Effect of Cooking Method and Cooked Color on Consumer Acceptability of Boneless Pork Chops

L. T. Honegger^{1*}, E. E. Bryan¹, T. K. Ruth², A. C. Dilger¹, and D. D. Boler¹

¹Department of Animal Sciences, University of Illinois, Urbana-Champaign, IL, USA

²Agricultural Communications Program, Department of Food Science and Human Nutrition, University of Illinois, Urbana-Champaign, IL, USA

*Corresponding author. Email: honeggr2@illinois.edu (L. T. Honegger)

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Objectives

The objective was to determine the effects of cooking method and degree of doneness on consumer eating experience of pork chops when consumers were allowed to observe differences in cooked color. The hypothesis was that when consumers were able to visualize cooked color, they would rate pork cooked to 63°C less acceptable than chops cooked to 71°C due to historical perceptions of pork degree of doneness. Additionally, consumers would find sous-vide chops less acceptable due to the lack of browning.

Materials and Methods

Sensory procedures for all consumer evaluations were reviewed and approved by the University of Illinois Office for the Protection of Research Subjects. Loins were purchased from a commercial abattoir at 1 d post-mortem, vacuum packaged, aged until 10 d post-mortem, then frozen. Frozen pork loins were cut into 3.2 cm thick chops. Loin origin was maintained for each chop such that consumers were served 4 chops that originated from the same loin. Frozen chops were vacuum packaged and allowed to thaw at approximately 4°C. Pork chops were cooked to either 63°C or 71°C using either an open-hearth grill or an immersion cooker sous-vide device. After cooking, chops were removed from the heating source and cut to expose the internal cooked surface. Cooked color was measured with a Minolta chroma meter. Chops were cut into 1 cm × 1 cm × 3.2 cm sections and served to 132 consumers. Consumers were seated in a breadbox style sensory booth room under fluorescent light to allow for cooked color appraisal. Each consumer was provided 4 samples (grill/63, grill/71, sous-vide/63, sous-vide/71). Consumers used a 9-point Likert-type score system to determine tenderness, juiciness, flavor,

and overall acceptability. Data were organized as a percentage of responses to determine the effects of cooking method, degree of doneness, and their interaction.

Results

Chops cooked to 63°C (4.10, 9.08) were more red and less yellow ($P = 0.01$) than chops cooked to 71°C (3.82, 9.39). There was an interaction of cooking method and degree of doneness for both tenderness and acceptability. Consumers rated a greater percentage ($P < 0.001$) of chops cooked sous-vide at 63°C as tender (82.82%) and acceptable (60.34%) compared with all other cooking method and degree of doneness combinations. There were no differences ($P = 0.06$) in the percentage of chops rated tender when cooked to 71°C between those sous-vide (33.07%) and grilled (22.42%). Additionally, there were no differences ($P = 0.06$) in the percentage of chops rated acceptable when cooked to 71°C between those sous-vide (26.35%) and grilled (28.63%). For juiciness, consumers rated a greater ($P < 0.01$) percentage of chops cooked to 63°C as juicy (44.37%) than those cooked to 71°C (14.78%) but ratings as juicy did not differ between cooking methods. For flavor, consumers rated a greater ($P < 0.01$) percentage of chops cooked to 63°C as flavorful (34.61%) than those cooked to 71°C (24.31%). Contrary to the expectation, ratings as flavorful did not differ between cooking methods ($P = 0.88$).

Conclusion

Even when consumers can identify cooked color, they preferred chops cooked to 63°C. However, the lack of browning on chops cooked using sous-vide did not compromise eating quality of chops.