

2018 Reciprocal Meat Conference – Consumer Topics

Meat and Muscle Biology™



Consumer Acceptability and Willingness-To-Pay of Cooked Beef Bratwurst Sausage Formulated With Pre- or Post-Rigor Beef

A. Theradiyil Sukumaran^{1*}, A. Holtcamp¹, M. Wes Schilling², J. Ellington³, K. Coatney³, and T. T. Dinh¹

¹Animal and Dairy Sciences, Mississippi State University, Starkville, MS, 39759, USA;

²Food Science Nutrition and Health Promotion, Mississippi State University, Starkville, MS, 39759, USA;

³Agricultural Economics, Mississippi State University, Starkville, MS, 39759, USA

*Corresponding author. Email: at1179@msstate.edu (A. Theradiyil Sukumaran)

Keywords: consumer preference, pre-rigor, sausage, willingness to pay
Meat and Muscle Biology 2(2):2

doi:10.221751/rmc2018.002

Objectives

The current study was designed to determine consumer acceptability and willingness-to-pay (WTP) of 2 products, pre- and post-rigor beef Bratwurst sausages.

Materials and Methods

From five 24-mo-old Holstein steers, the left chucks were deboned, ground (1.27-cm particle size), and salted (1.5% w/w) within 2 h post-mortem (pre-rigor treatment); whereas the right chucks were deboned at 72 h post-mortem (post-rigor treatment). On the day of sausage production (d 6 post-mortem), post-rigor trimmings were ground to 1.27-cm particle size and salted with 1.5% sodium chloride (w/w). Both pre- and post-rigor ground beef was processed into sausage batter by grinding the lean and fat trimmings separately through a 0.16-cm plate and mixing them with ingredients (beef bratwurst spice mix, water/ice slurry, corn syrup, erythorbate, nitrite, salt, and 0.25% w/w sodium tripolyphosphate). Sausages were cooked to 74°C by a generic smoked sausage cycle, including pre-drying, smoking, steaming, and cold shower, vacuum-packaged, and stored for 30 d at 2°C. Sausage links were warmed to 74°C and cut to 2.54-cm thickness. A total of 100 consumers evaluated appearance, aroma, flavor, texture, and overall acceptability on a 9-point hedonic scale. Each consumer was served with both pre- and post-rigor sausage from the same steer during each session. Immediately after the sensory evaluation, subjects were asked to formulate a WTP for each product using the information recorded on the evaluation sheets. A Becker–DeGroot–Marshak auction mechanism was used to solicit truthful WTPs. An aggregate unit-demand curve was constructed from the entire subject pool's bidding data. Cluster analysis was conducted by the Agglomerative Hierarchical Clustering

procedure in XLSTAT 2018.2.50198 using Ward's method. Consumer acceptability was subsequently analyzed in each cluster by the GLIMMIX procedure of SAS 9.4 (SAS Inst. Inc., Cary, NC) at 0.05 level of significance.

Results

Cluster analysis revealed 5 consumer clusters based on overall acceptability. Cluster 1 (7.9 and 8.1 overall acceptability unit for pre- and post-rigor, respectively; $P = 0.130$) and 5 (3.9 and 3.4 for pre- and post-rigor, respectively; $P = 0.340$) consisted of 40 consumers and had no difference in any sensory attribute between pre- and post-rigor treatments ($P \geq 0.091$). However, panelists in cluster 3 (37 consumers) preferred the aroma, flavor, and texture of pre-rigor than post-rigor sausage ($P \leq 0.011$). Similarly, 8 consumers in cluster 4 preferred the flavor, texture, and overall acceptability of pre-rigor than post-rigor sausage ($P \leq 0.020$). However, 15 consumers in cluster 2 liked the texture of post-rigor sausage better ($P = 0.004$). Average predicted demand was 0.7 lb greater for pre-rigor than post-rigor sausage ($P \leq 0.001$). In a scenario with a realistic market price of \$6/lb, demand for pre-rigor sausage was 5% greater than post-rigor sausage. This greater demand for pre-rigor sausage might be driven by the greater acceptability of flavor and texture found in cluster 3 and 4.

Conclusion

Pre-rigor processing yields sausage with greater consumer acceptability and demand. However, scalable production costs should be considered before finalizing the decision to implement pre-rigor processing in an industrial setting.