

# Beliefs of Eastern European consumers about the meat from castrated pigs

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## I. INTRODUCTION

Castration is practiced to eliminate boar taint in the final pork product. This is important, as consumers do not want a product with an unpleasant smell or flavor. Surgical castration of piglets is still performed in many countries (Eastern Europe included) to prevent boar taint. However, societal pressure to ban this practice is increasing and several representatives of the pork production chain in EU countries have signed a declaration of intention to ban surgical castration in 2018. Lower acceptability of meat from entire males was already reported in different studies [1]. This acceptability depends on several factors, and one of them is the country of origin [2, 3]. Even more, the level of dissatisfaction associated with entire male pork and Western European consumers has been underestimated in the consumer surveys conducted, so far [4]. The beliefs of Eastern European consumers about the meat from castrated pigs was never investigated before and we aimed our study to fill in this gap.

## II. MATERIALS AND METHODS

The field survey regarding beliefs of Eastern European consumers about the meat from castrated pigs has been conducted in 2017 using a questionnaire directed to 5,209 consumers of 13 Eastern European countries (Bosnia and Herzegovina, Bulgaria, Croatia, Czechia, Macedonia, Hungary, Moldova, Poland, Slovakia, Serbia, Slovenia and Ukraine). A two-step cluster analysis using country as a categorical variable was conducted in order to classify the observed statements. One-way ANOVA test uncovered statistically significant differences among the clusters and Tukey test was used for post-hoc comparison. Statistical processing was performed using MS Excel and SPSS.

## III. RESULTS AND DISCUSSION

Three clusters were identified (Table 1). Cluster 1 (24.5%) encompassed 2/3 of Bulgarian and more than a 1/2 Hungarian consumers. They disagreed strongly that pig castration with vaccines improves pork quality, and disagreed that meat from castrated pigs is more expensive. They were not willing to pay a little more for meat from castrated pigs. Cluster 2 was the largest cluster (47.7%) and consisted of more than 60% of the consumers from Bosnia and Herzegovina, Croatia, Czechia, Poland, Serbia and Slovenia. These consumers had mainly no opinion about the quality of meat from castrated pigs. Cluster 3 (27.7%) was widely dispersed among Eastern European countries investigated and was mostly characterized by more than a 1/2 of Slovakian and almost a 1/2 of Moldovan consumers. They most strongly believed that meat from castrated pigs is of better quality and preferred the most to eat meat from castrated pigs, compared to other identified clusters of

Eastern European consumers. They also agreed that they are willing to pay a little more for meat from castrated pigs (Table 1).

**Table 1** Description of the three clusters in terms of country and beliefs (N=5,209)

	Cluster 1 (n=1,281)	Cluster 2 (n=2,484)	Cluster 3 (n=1,444)	Total (100%)	
Country	Bosnia and Herzegovina	44 (13.6%)	235 (72.5%)	45 (13.9%)	324
	Bulgaria	250 (71.4%)	45 (12.9%)	55 (15.7%)	350
	Croatia	63 (20.9%)	181 (60.1%)	57 (18.9%)	301
	Czechia	114 (22.4%)	313 (61.4%)	83 (16.3%)	510
	Macedonia	65 (22.8%)	109 (38.2%)	111 (38.9%)	285
	Hungary	209 (52.3%)	51 (12.8%)	140 (35.0%)	400
	Moldova	26 (8.7%)	138 (46.0%)	136 (45.3%)	300
	Poland	52 (10.3%)	378 (75.1%)	73 (14.5%)	503
	Slovakia	52 (19.1%)	65 (23.9%)	155 (57.0%)	272
	Serbia	68 (22.6%)	195 (64.8%)	38 (12.6%)	301
	Slovenia	130 (19.2%)	414 (61.1%)	134 (19.8%)	678
	Ukraine	66 (28.1%)	101 (43.0%)	68 (28.9%)	235
	Meat from castrated pigs is of better quality	4.4 ± 1.8 <sup>a</sup>	4.1 ± 0.9 <sup>b</sup>	5.8 ± 1.0 <sup>c</sup>	4.7 ± 1.5
The meat from castrated pigs is more expensive	2.9 ± 1.4 <sup>a</sup>	4.1 ± 0.8 <sup>b</sup>	4.4 ± 1.4 <sup>c</sup>	3.9 ± 1.3	
I am willing to pay a little more for meat from castrated pigs	3.3 ± 1.7 <sup>a</sup>	3.7 ± 1.1 <sup>b</sup>	5.3 ± 1.1 <sup>c</sup>	4.0 ± 0.5	
Meat from castrated pigs is leaner	3.5 ± 1.7 <sup>a</sup>	3.8 ± 0.8 <sup>b</sup>	4.0 ± 1.4 <sup>b</sup>	3.8 ± 1.3	
I prefer to eat meat from castrated pigs	4.8 ± 1.8 <sup>a</sup>	3.8 ± 0.9 <sup>b</sup>	5.6 ± 1.1 <sup>c</sup>	4.5 ± 1.5	
Pig castration with vaccines improves pork quality	2.3 ± 1.2 <sup>a</sup>	4.1 ± 0.9 <sup>b</sup>	4.2 ± 1.2 <sup>b</sup>	3.7 ± 1.4	

Note: Items denoted with different letters are significantly different at the level of 5%. Likert scale: (1) "Disagree very strongly", (2) "Disagree strongly", (3) "Disagree", (4) "No opinion", (5) "Agree", (6) "Agree strongly", (7) Agree very strongly"

#### IV. CONCLUSION

Different beliefs regarding meat from castrated pigs have been identified in Eastern European consumers, but most of the consumers have no opinion on the majority of aspects considered in this work.

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#### REFERENCES

1. Font-i-Furnols, M. (2012). Consumer studies on sensory acceptability of boar taint: A review. *Meat Science* 92(4): 319-329.
2. Weiler, U., Font i Furnols, M., Fischer, K., Kemmer, H., Oliver, M. A., Gispert, M., . . . Claus, R. (2000). Influence of differences in sensitivity of Spanish and German consumers to perceive androstenone on the acceptance of boar meat differing in skatole and androstenone concentrations. *Meat Science* 54(3): 297-304.
3. Aluwé, M., Aaslyng, M., Backus, G., Bonneau, M., Chevillon, P., Haugen, J. E., . . . Font-i-Furnols, M. (2018). Consumer acceptance of minced meat patties from boars in four European countries. *Meat Science* 137: 235-243.
4. Bonneau, M., Walstra, P., Claudi-Magnussen, C., Kempster, A. J., Tornberg, E., Fischer, K., . . . Cook, G. L. (2000). An international study on the importance of androstenone and skatole for boar taint: IV. Simulation studies on consumer dissatisfaction with entire male pork and the effect of sorting carcasses on the slaughter line, main conclusions and recommendations. *Meat Science* 54(3): 285-295.