EFFECT OF CARAWAY (*CARUM CARVI* L.) ESSENTIAL OIL ADDITION ON MASKING BOAR TAINT IN COOKED PORK SAUSAGE

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I. INTRODUCTION

Boar taint is an unpleasant off-flavor in meat of entire male pigs, induced by accumulation of androstenone and skatole [1]. Approximately 99% of consumers are sensitive to skatole, faeces and manure smelling metabolite of the amino acid tryptofane, and it is regarded as highly unpleasant [2, 3]. In order to reduce boar taint in meat and meat products, different strategies were applied, including the use of several spices and plant extracts [3]. The aim of this research was to evaluate the effect of caraway essential oil addition on reducing the boar taint in cooked pork sausages, produced with two levels of skatole (0.2 ppm and 0.4 ppm).

II. MATERIALS AND METHODS

Cooked pork sausages were produced in meat processing pilot plant within Institute of Food Technology Novi Sad (FINS). In order to prepare model tainted sausages synthetic skatole was added to fat tissue of castrates (skatole<0.05 ppm) and mixed with lean meat. The main mixture consisted of lean meat (50%), ice water (25%), pork back fat (20%), soy protein (2%), nitrite salt (1.8%), posphates (0.2%) and spice mix (1%). Skatole was added to the sausage batters at concentration of 0.2 ppm (SK1) and 0.4 ppm (SK2). In SK1 and SK2 batches caraway essential oil was added at concentrations of 0.075 µL/g (SK1EO1; SK2EO1) and 0.150 µL/g (SK1EO2; SK2EO2). The sausage batter without SK and EO addition was marked as control (C). All batches were stuffed into artificial casings (diameter of 36 mm) and pasteurized until an internal temperature of 72°C was reached. Immediately after the heating process sausages were cooled and stored in the cooling chamber (to +4°C) until an analysis. The consumers (students and staff members of the Faculty of Technology Novi Sad) evaluated the samples according to nine point hedonic scale from dislike very much (1) to like very much (9).

III. RESULTS AND DISCUSSION

The overall liking score was the highest for control sample sausage (C) and the lowest for the sausages produced with both skatole concentrations (SK1; SK2) (Table1.).

Table 1. Summary statistics from the consumer test data (attribute: overall liking*)

Sample	N	Mean	Median	StDev	Min	Max
C	35	6.23	7.0	1.78	2.0	9.0
SK1	35	5.41	5.0	1.88	2.0	8.0
SK1EO1	35	5.68	6.0	2.03	1.0	8.0
SK1EO2	35	5.56	6.0	1.85	2.0	9.0
SK2	35	5.27	5.0	1.56	1.0	8.0
SK2EO1	35	5.94	6.0	1.52	3.0	9.0
SK2EO2	35	5.77	6.0	2.05	2.0	9.0

SK1-0.2 ppm skatole; SK1EO1-0.2 ppm skatole+0.075 µL/g essential oil; SK1EO2-0.2 ppm skatole+0.150 µL/g essential oil; SK2-0.4 ppm skatole; SK2EO1-0.4 ppm skatole+0.075 µL/g essential oil; SK2EO2-0.4 ppm skatole+0.150 µL/g essential oil.

The addition of caraway essential oil had a positive effect on masking the boar taint. However, sausages prepared with higher concentration of EO (SK1EO2; SK2EO2) had lower scores for overall liking compared to their counterparts made with lower concentration of caraway essential oil (SK1EO1; SK2EO1). These results indicated that the addition of EO could be a good solution for masking of boar taint, but the optimization of EO concentrations is needed.

IV. CONCLUSION

The data from this study showed that addition of caraway essential oil in cooked pork sausages may be a good solution for successful usage of meat from entire male pigs. However, further research is necessary in order to investigate other essential oils and extracts, isolated from different plant materials, as well as the optimization of their application.

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