Sensory evaluation of pro-healthy beef meatballs with increasing levels of turmeric

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Introduction: The increasing demand for clean label and healthier meat products (especially with healthier fat composition) among consumers are pushing the meat industry towards the search and use of natural ingredients to achieve these goals. However, the reformulation of meat products may affect their sensory acceptance and oxidative stability (Domínguez et al., 2019, 2021). Turmeric (*Curcuma longa* L.) is an important seasoning in Indian and Asia cuisine. Moreover, the bioactive compounds (curcuminoids) found in this rhizome also exert an important antioxidant activity and can reduce the risk of development of non-communicable diseases (de Carvalho et al., 2020; Munekata et al., 2021). However, the effect of turmeric in sensory properties of healthier meat products is poorly known. This study aimed to evaluate the effect of different levels of turmeric in the sensory acceptance of fresh beef meatballs.

Materials and methods: Beef meat balls were elaborated with beef, Prosella® gel with canola oil, sodium chloride, water, and antioxidant. Five treatments were prepared: control (without antioxidant), E500 (sodium erythorbate; 500 mg/kg), T25, T50 and T75 (turmeric; 25, 50 or 75 mg/kg, respectively). Freshly prepared meatballs were used for sensory analysis. The panel was composed of 69 consumers. The preference order test (POT) was applied to rank the appearance and odor of raw samples and odor, flavor, texture, and overall acceptance of cooked samples. A 7-point Just About Right scale was also used to evaluate the overall acceptance of cooked samples. Analysis of variance, least significance difference test, Friedman's analysis of variance for ranked data (POT), and penalty analysis were carried out in the XLSTAT software (Addinsoft, 2019).

Results: Analysis of variance did not indicate significant differences in overall acceptance among treatments. In the preference order test, control and T50 were more liked than T75 for appearance attribute. Non-significant differences were obtained for other variables in the POT. Moreover, penalty analysis in T25, T50 and T75 treatments data did not indicate significant effects of studied attributes in the overall acceptance of beef meatballs. A similar experiment indicated non-significant differences in color, odor, tenderness, juiciness, and overall acceptability of cooked meatballs produced with vegetable oil due to increasing levels of turmeric powder (0.1, 0.2 and 0.3%) (Milon et al., 2016). Likewise, pork burgers with beeswax and curcumin (0.2 g/100 g oleogel) oleogel received similar scores for flavor, texture, and overall acceptability to control burgers (Gómez-Estaca et al., 2020).

Conclusions: Turmeric (at 50 mg/kg) does not negatively impact the sensory acceptance of fresh beef meatballs and is an interesting natural additive in this meat product.

Literature:

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