Physicochemical properties of beef 'salchichón' elaborated with vegetable oil and turmeric extract

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Introduction: Replacement of animal fat with vegetal oils has been successful as a strategy to develop new healthy food. However, usually, this substitution leads to an increase in unsaturated fatty acids and consequently a decrease in oxidative stability (Lorenzo et al., 2016). To minimize this problem, the use of natural antioxidants in the new formulation could be feasible. In this sense, turmeric has been proved as an excellent source of compounds with antioxidant activity (de Carvalho et al., 2020). The present study evaluated the effect of turmeric addition on physicochemical properties of healthy beef Spanish 'Salchichón'.

Materials and methods: The 'Salchichón' was elaborated with beef from the autochthonous breed Cachena and the backfat from pork was replaced by canola oil emulsified in Prosella. Turmeric extracts were added to complete the formulation. Three batches were manufactured: C (without antioxidant), T-25 (0.25% turmeric) and T-50 (0.50% of turmeric). Proximate composition (moisture, protein, fat and ash) physicochemical properties (pH, color and texture), oxidative stability measured by TBARS index and preference consumer were assessed.

Results: Regarding the chemical composition of 'Salchichones', there were no significant differences ($P>0.05$) among the three batches, showing average values for moisture, protein fat and ash of 32.7%, 33.9%, 16.4% and 6.6%, respectively. It should be noted that the fat content of the 'Salchichones'of the present study was reduced by 16% with respect to those values showed in the traditional formulated 'Salchichón' (Lorenzo et al., 2016). Concerning pH values, there were significant differences ($P\leq0.01$) resulting in a slight acidification of the samples elaborated with turmeric (5.30 vs. 5.19, for control and T-50, respectively). The textural parameters of samples (hardness, cohesiveness, chewiness and gumminess) were not affected. On the contrary, the incorporation of turmeric led to a significant decrease ($P<0.05$) in the redness index (a*), as well as, an increase in yellowness index (b*). Mean values of 9.2 vs. 6.0, for control and T-50, respectively in a* and 7.6 vs. 9.4, for control and T-50, respectively in b* were found. However, this variation in the final 'Salchichón' color by incorporation of turmeric did not affect the consumer's preference. The TBARS values decreased in the batches formulated with turmeric extract, indicating an improvement in lipid oxidation.

Conclusions: In the conditions of the present study, the addition of turmeric seemed to have a little protective effect over the fat of beef 'Salchichón' elaborated with canola oil in replacement of pork backfat. Further studies, increasing the turmeric concentration are necessary to confirm it. As the addition of turmeric did not affect the texture and consumer preferences in terms of color of the 'Salchichones', its use as a natural antioxidant could be considered in the meat industry.

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