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The effect of diet and DHA addition on the sensory quality of goat kid meat

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To enhance the nutritional quality of meat, dietary strategies have been developed to manipulate the fatty acid profiles of muscle tissues. Fatty acids affect meat attributes, including hardness, colour and lipid stability, and flavour. Little research has been done, however, on the effects of dietary omega-3 polyunsaturated fatty acid (PUFA) supplementation on the sensory characteristics of meat. Docosahexaenoic acid (DHA) is one of the critical omega-3 PUFA for the optimal performance of multiple body systems and therefore one of the most used to improve the meat quality. To address this issue, six diets were fed to goat kids: goat's milk (GM), powdered whole cow's milk (CM), powdered whole cow's milk plus DHA (low dose; CM-LD-DHA), milk replacer (MR), milk replacer plus DHA (low dose; MR-LD-DHA), and milk replacer plus DHA (high dose; MR-HD-DHA). A descriptive, semi-trained sensory evaluation and a consumer triangular test were performed to analyze the resulting meat. Generalized Procrustes Analyses (GPA) were used to analyze the descriptive sensory data, while triangular tests were analyzed by consulting tables within the Norma UNE-EN ISO 4120. High doses of omega-3 PUFA produced meat with unusual odours, unpleasant flavours, and low overall appreciation scores. Low doses of DHA maintained a positive sensory perception. However, consumers could not detect a difference between meat derived from animals fed GM, CM, or MR (with or without supplemental n-3 PUFA). In conclusion, the used concentration of DHA is a critical factor in the sensorial quality of the meat products.