Transformation and valorisation of river fish: Sensory evaluation of smoked crucian carp (*Carassius carassius*) and brown trout (*Salmo trutta*)

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ABSTRACT

The regular consumption of fish is recommended by the World Health Organization. Fish fat is rich in polyunsaturated omega-3 fatty acids (Steffens, 1997) and is recommended by various health authorities (Jorge *et al.,* 2018). Fish is also a valuable source of proteins with high biological value and essential amino acids such as lysine and isoleucine (Craveiro *et al.,* 2016). While saltwater fish are generally well-accepted, some consumers have negative perceptions of freshwater fish, based on previous unpleasant experiences related to taste, appearance, and the high presence of bones (Badr *et al*., 2015). Smoking fish can improve their sensory properties and extend their shelf life simultaneously (Olaniyi *et al*., 2023). The objective of this study was to assess the sensory evaluation of smoked and dried river fish, specifically crucian carp (*Carassius carassius*) and brown trout (*Salmo trutta*). These fish were smoked in a specialized cooking and smoking chamber (JUGEMA, KWE-1) at 25°C for 45 minutes, using a combination of hickory and oak. Following the smoking process, the fish were dried at 75°C for 3 hours. Sensory tests were conducted in accordance with ISO 8589 specifications. The samples were randomly presented to a panel of tasters (n=15, with a ratio of 67% female and 33% male). The sensory evaluation included assessments of appearance, texture, taste, aroma, and overall appreciation using a 9-point hedonic scale. Both products scored above the acceptance threshold (5 points), with an overall score of 6.27 for crucian carp and 6.80 for brown trout.

Keywords: Fish, Sensory Evaluation, Smoking.

References:

Badr, L. M., Salwa, O., & Ahmed, Y. (2015). Perceived barriers to consumption of freshwater fish in Morocco. British Food Journal, 117(1), 274–285. https://doi.org/http://dx.doi.org/10.1108/BFJ-10-2013-0312

Craveiro, C., Real, H., Barbosa, M., Xará, S., Carvalho, T., & Rodrigues, T. (2016). Pescar Saúde. Associação Portuguesa dos Nutricionistas.

Jorge, A. F., Alexandre, C. M., Almeida, P. R., Machado, M. G., Silva, M. G. da, & Lança, M. J. (2018). Perfil nutricional lipídico de achigã proveniente de várias albufeiras do Alentejo André.

Olaniyi, O. A., Eyina Dienye, H., Denson, G. C., & Onyekwere, V. C. (2023). Effects of smoking processes on the nutritional value of cultured catfish (*Clarias gariepinus*). Journal of Faculty of Food Engineering, XXII(1), 71–78. https://doi.org/10.4316/fens.2023.007

Steffens, W. (1997). Effects of variation in essential fatty acids in fish feeds on nutritive value of freshwater fish for humans. Aquaculture, 151(1–4), 97–119. https://doi.org/10.1016/S0044-8486(96)01493-7