

## **Effect of Selected Wood Smoke on Physicochemical and Sensory Qualities of Tilapia (*Oreochromis niloticus*)**

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Different preservation and processing techniques have been used to extend the shelf life of fish. Smoking is a technique that enhances the flavour, colour, texture and shelf life of fish. This study was conducted to identify specific smoking conditions for Tilapia (*Oreochromis niloticus*) while comparing the physicochemical and sensory qualities of Tilapia smoked using selected wood smokes. Tilapia fillets of same thickness were obtained and trials were conducted to identify the best brine concentration, temperature/time combination and wood material. The fillets were immersed in brine containing 2.5, 5.0, 7.5, 10.0 and 12.5% (w/v) NaCl for 1 hour. Then fillets were smoked with wood smoke under three different temperatures (50, 60 and 70°C) and three drying times (3, 4 and 5 hours) using a smoking oven. Based on the selected temperature/time combinations Tilapia were smoked using mahogany, cinnamon and their combination (1:1). Final products were vacuum packed and stored at 4°C for analysis. Quality changes in sensory attributes were tested with 30 untrained panelists. Microbial quality (*Salmonella*, *Escherichia coli* and Total Plate Count), TBARS, DPPH assay, pH and colour were detected during 21 days of chilled storage and proximate analysis was conducted. Fish brined in 10% (w/v) NaCl and smoked at 60°C for 4 hours using mahogany: cinnamon at 1:1 had the best sensory qualities ( $p < 0.05$ ). Microbial counts and lipid oxidation were within the permitted levels. During the chilled storage pH was changed from  $6.63 \pm 0.09$  to  $6.70 \pm 0.08$  ( $p > 0.05$ ). An increase in lightness ( $40.85 \pm 0.32$  to  $42.02 \pm 1.22$ ) was observed whereas the redness ( $8.86 \pm 0.69$  to  $6.84 \pm 0.11$ ) was decreased. In conclusion, immersing Tilapia fillets in brine containing 10% (w/v) NaCl followed by smoking at 60°C for 4 hours using mahogany: cinnamon at 1:1 can be considered as the best conditions to produce smoked Tilapia. However, further studies need to be done to compare the chemical changes occurred due to smoking.

**Keywords:** Tilapia, Wood smoke, Sensory qualities, Mahogany, Cinnamon