

**COMPARISON OF THE COMMERCIAL LIQUID  
SMOKE FLAVORING AND SELECTED WOOD  
SMOKE ON THE PHYSIOCHEMICAL AND  
SENSORY QUALITIES OF TILAPIA**

***(Oreochromis niloticus)***

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## ABSTRACT

Different preservation and processing techniques have been used to extend the shelf life of fish. Smoking is a technique that enhances the flavor, color, texture and shelf life of fish. This study was conducted to identify specific smoking conditions while comparing the physiochemical and sensory qualities of smoked Tilapia using wood smoke and commercial liquid smoke. Frozen Tilapia were received and thawed in air. After filleting and washing, trials were conducted to identify the best brine concentration, temperature/ time combination and wood material for smoked Tilapia. According to the selected smoking conditions wood smoked Tilapia were produced. The fillets were immersed in brine containing 10% (w/v) NaCl for 1 hour and smoked directly with wood smoke in a smoking oven at 60°C for 4 hours. Liquid smoked Tilapia were produced by immersing fillets in a liquid smoked brining solution containing 5% (v/v) liquid smoke and 3% (w/v) NaCl for 1 hour. After smoking fillets were dried at 80°C for 3 hours in an oven. 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, color and texture 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. Both of the products were rather stable in pH during the chilled storage where pH oscillated between 6.63- 6.7 and 6.87- 6.79 respectively in wood smoked and liquid smoked groups ( $p > 0.05$ ). Liquid smoked product had the better sensory properties throughout the studied period ( $p < 0.05$ ). 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.

*Key words:* Tilapia, Wood smoke, Liquid smoke, Sensory qualities, Cinnamon