Abstract

Fish is a highly nutritious food which deteriorates rapidly. Smoking is quite important as a preservation method for fish while improving color, texture, flavor and shelf life. This study was conducted to ascertain physico-chemical properties of smoked Tilapia using a commercial liquid smoke flavoring. Frozen Tilapia were received and thawed in air at 0-5°C for 17 hours. Liquid smoked Tilapia were produced by immersing fillets for 1 hour in a liquid smoked brining solution containing 5% (v/v) liquid smoke and 3% (w/v) NaCl followed by drying at 80°C for 3 hours in an electrical oven. Final products were vacuum packed and stored at 4°C for analysis. Proximate composition was measured for moisture, ash, crude fat and crude protein just after smoking. Microbial quality (Salmonella, Escherichia coli and Total Plate Count), TBARS, pH, color and texture were detected during 21 days of chilled storage (4°C). Collected data were analyzed using one-way ANOVA and Complete Randomized Design. It was observed 49.78%±0.9% moisture, 7.01±0.9% ash, 12.9±0.18% crude fat and 26.6±0.54% crude protein in smoked fillets. Microbial counts were gradually increased from 4.84±0.06 to 5.67±0.09 log CFU/g while TBARS values were ranged between 0.07±0.00 to 0.037±0.02 mg malondialdehyde per kg of fish (p<0.05). pH ranged between 6.87±0.07 to 6.79±0.10. Both of lightness (44.48±1.97 to 35.18±1.27) and yellowness (20.43±1.94 to 17.54±1.36) indicated a significant (p<0.05) decrease whereas the increase of redness (7.07±1.53 to 9.88±1.19) was insignificant (p>0.05). In conclusion, microbial counts and lipid oxidation of liquid smoked Tilapia were within the permitted levels under the chilled storage for 21 days. Hence, the Tilapia fillets incorporated 5% liquid smoke flavoring can be safely stored at 4°C for 21 days under the vacuum package. Therefore, it is recommended to incorporate liquid smoke flavoring to inland fish.

Results and Discussion

Change of lipid oxidation in liquid smoked Tilapia stored at 4°C

- TBA values were well below the limits of 1-2 mg MDA/ kg of fish flesh (Connell, 1995)

Change of colour in liquid smoked Tilapia stored at 4°C

- Significant colour changes were observed in lightness and yellowness

Microbial analysis of liquid smoked Tilapia stored at 4°C

- TPC were in acceptable level (TPC below 5 log cfu/ g indicates good microbiological quality in hot smoked fish products (Centre for Food Safety, 2014))
- *Salmonella* and *E. coli* were absent in liquid smoked Tilapia

Conclusion

- Tilapia fillets incorporated 5% (v/v) liquid smoke flavoring can be safely stored at 4°C for 21 days under the vacuum package

References