

Determination of Poly Aromatic Hydrocarbon (PAH) in Fish Smoked with Different Wood Smoke

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Fish smoking is most extensively used simplest preservation technique. Accumulation of carcinogenic Poly Aromatic Hydrocarbons (PAHs) generated from wood burning is a major problem associated with the smoked fish. Therefore, objective of this study was to select suitable firewood available in the country for fish smoking. Therefore, smoked fish was processed using marinated yellow fin tuna (*Thunnus albacores*) and Blacktrip travelly (*Caranx heberi*) with four different types of wood smoke (Mango, Jack, Neem and Cinnamon). Fish smoking was carried out following similar conditions of wood and smoking chamber developed at ITI Proximate composition, water activity, colour, texture, PAHs content and microbiological quality of fresh fish, market smoked fish and developed smoked fish were analyzed. Organoleptic qualities of samples were analyzed using trained sensory panel of ITI. The PAHs in the samples were analyzed using Agilent 1260 Infinity HPLC. Results were statistically analyzed using SPSS19 software. Moisture, protein, ash and content of fresh travelly and tuna were ranged from 72.13% - 73.39%, 21.53% - 22.84%, 0.98% - 1.34%, 4.39% - 5.38% and 74.83% - 75.49%, 22.13% - 23.42%, 22.13% - 23.42%, 1.03% - 1.13% respectively. Same as APC of fresh travelly and tuna were ranged from 4.7×10^9 - 8.0×10^9 and 6.6×10^9 - 9.0×10^9 . Moisture content, water activity, fat content of smoked travelly and tuna ranged from 69.32% - 71.28%, 0.978 - 0.990, 8.13% - 12.85% and 69.93% - 73.24%, 0.973 - 0.987, 1.13% - 2.58% respectively. APC just after smoking travelly and tuna were ranged from 2.6×10^5 - 3.8×10^5 and 1.7×10^5 - 4.0×10^5 . Smoked fish processed with both fish species were shown significant difference of APC just after smoking and after 7day under refrigerated conditions ($P < 0.05$). Yeasts and molds were only detected in smoked fish with Neem wood. *E. coli* and *Salmonella* were not detected in all smoked products. Firmness ranged from 0.577- 1.247 in smoked travelly and 0.874- 1.647 in smoked tuna. There was no any PAHs detected in fresh travelly samples. The total PAH levels ($\mu\text{g}/\text{kg}$) in travelly smoked using Jack, Neem, Cinnamon and Mango were 48202.2, 14794.1, 11988.9 and 1920.8 respectively. The total PAHs in fresh tuna was 1891.1 $\mu\text{g}/\text{kg}$. Total PAHs ($\mu\text{g}/\text{kg}$) of