

**EVALUATION OF POLYCYCLIC AROMATIC
HYDROCARBONS (PAHs) IN SMOKED CATLA (*Catla catla*)
AND TILAPIA (*Oreochromis niloticus*) HARVESTED FROM
SELECTED RESERVOIR WITH DIFFERENT COMBUSTION
MATERIALS AND STORAGE CONDITIONS**

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by

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ABSTRACT

Smoking is one of the oldest techniques of fish preservation and at present smoked fish has higher consumer demand due to their specific taste and aroma. Although, accumulation of carcinogenic Polycyclic Aromatic Hydrocarbons (PAHs) through the wood smoke is a major problem associated with smoked fish. Hence, present study was carried out to evaluate PAHs and their penetration with storage time in smoked Catla (*Catla catla*) and Tilapia (*Oreochromis niloticus*). Freshly harvested Catla (n=3) and Tilapia fishes (n=12) were brought from Handapanagala reservoir, Monaragala and equal size Catla fish cubes and Tilapia fish "roasts" were smoked using electrical smoker with Cinnamon (*Cinnamomum verum*) and Mahogany (*Swietenia macrophylla*) wood smoke separately and stored at -20°C after vacuum packing. QuEChERS method was performed to PAHs extraction at predetermined time intervals. Outer layer and center part of the smoked fish were analyzed for sixteen PAHs with Dionex Ultimate 3000 UHPLC system equipped with Diode Array detector. Moisture content and crude fat content of raw fish samples were analyzed. Indeno[1,2,3-*cd*]pyrene was detected in one of the raw Catla fish samples, while Benzo[*a*]pyrene, Benzo[*ghi*]perylene, Indeno[1,2,3-*cd*]pyrene were detected in both fish samples smoked with both wood materials. Total PAHs content at day 01 was low in both Catla (Mahogany: 0 µg/kg, Cinnamon: 904 µg/kg) and Tilapia (Mahogany: 774 µg/kg, Cinnamon: 2428 µg/kg) smoked with Mahogany compared to Cinnamon and with the storage (at day 07) it has decreased. There were no any detectable amounts of PAHs in Catla smoked with Mahogany wood. No pattern of penetration of PAHs to center was observed in neither Catla nor Tilapia with both wood materials. Therefore, it can be concluded that Mahogany wood could be a suitable wood type to smoke fish and accumulated PAHs amount in smoked products could be reduce by storing in frozen conditions.

Key words: Polycyclic aromatic hydrocarbons, Catla, Tilapia, QuEChERS, Cinnamon, Mahogany