

### **Preliminary investigation of polycyclic aromatic hydrocarbon levels in smoked fish produced by fisher community in Sri Lanka**

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Food smoking is one of the oldest technologies of food processing and preservation. There are potential health hazards occur with consumption of smoked food due to presence of carcinogenic components in wood smoke, mainly polycyclic aromatic hydrocarbons (PAHs) at unacceptably high levels. Concentration of PAHs in hot-smoked fish samples processed using traditional direct smoking methods by fisher communities in Sri Lanka were investigated with the aim of comparing these levels with maximum acceptable PAHs levels in food specified as safe for consumption by European Union (EU) Standard. In this study, 13 smoked fish samples (species) were investigated. The fish species included in this study were *Labeo dussumieri* (Common Labeo), *Channa striata* (Mural), *Entropilus suratensis* (Green Chromide), *Ompok bimaculatus* (Butter Catfish), *Heteropneustes fossilis* (Stinging Catfish), *Channa gachua* (Snakeheads), *Oligolepis acutipennis* (Sharp-tail Goby), *Liza sp.* (Mulletts), *Oreochromis niloticus* (Nile tilapia), *Catla catla* (Catla), *Mystus keletius* (Yellow Catfish) and *Channa orientalis* (Ceylon Snakehead). The methodology involved in determining the PAHs levels were Soxhlet extraction of fish sample using dichloromethane, cleaning of soxhlet-extract by elution through silica gel column, and determination of PAH profiles by High Performance Liquid Chromatography (HPLC) using Diode Array Detector (DAD). The results showed that hot-smoked fish that were processed by traditional fish smoking method contained had high levels of total PAHs. The total content of PAHs (16 PAHs) of different fish species found in the range of 187.3 - 4222.9 µg/kg with more than 90% of this content corresponding to high molecular weight compounds (pyrene, chrysene, benzo(a)anthracene, benzo(a)pyrene, benzo(k)fluoranthene, benzo(b)fluoranthene, indeno(1,2,3,cd)pyrene, benzo(g,h,i)perylene and Dibenz(a,h)anthracene). The fish species *Mystus keletius* contained the highest total PAH level (4222.9 µg/kg) while *Liza sp.* showed the lowest total PAH level (187.3 µg/kg). Concerning benzo (a) pyrene the content varied between (3.84 - 1728.9 µg/kg) exceeding the imposed