

**STUDY OF ACCUMULATION OF POLYCYCLIC  
AROMATIC HYDROCARBONS (PAHS) IN  
SMOKED FISH (*Thunnus albacares*) UNDER  
DIFFERENT STORAGE CONDITIONS**

A dissertation submitted to the  
Faculty of Animal Science and Export Agriculture

Uva Wellassa University

in partial fulfillment of the requirement of

the degree of

Bachelor of Animal Science

By

**DILINI NIWARTHANA MANAGE UYANGODA**

**Department of Animal Science**

**Faculty of Animal Science and Export Agriculture**

**Uva Wellassa University**

**2018**

## ABSTRACT

Fish smoking is the most extensively used simplest preservation technique. Although, accumulation of carcinogenic Polycyclic Aromatic Hydrocarbons (PAHs) from wood burning is a major problem associated with the smoked fish. Hence, this research was focused to study the penetration of PAHs in to center of the smoked fish (*Thunnus albacares*) and effect of accumulated PAHs content with the time under different storage conditions. Fish chunks which having equal thickness were smoked using smoke of coconut husk and stored under refrigerated (4°C) and frozen (-18°C) conditions. PAHs content of surface and center part of stored smoked fish chunks were analyzed by Infinity Quaternary Gradient HPLC system with FLD and UV detectors at predetermined time intervals. Moisture content, water activity, pH, texture, and color of smoked fish samples were analyzed. PAHs content (Anthracene) of the surface of the smoked fish at the beginning of storage was 298.25 µg/kg and it was declined during both refrigerated (after 6 day 130.09 µg/kg) and frozen storage (after 14 day 212.97 µg/kg). But PAHs content (Anthracene) of the center of the smoked fish at the beginning of storage was 0.00 µg/kg and it was increased during both refrigerated (after 6 day 19.88 µg/kg) and frozen storage (after 14 day 11.448 µg/kg). There were significant changes in the moisture content, water activity, pH ( $p < 0.05$ ). And there were no significant changes in the firmness ( $0.909 \pm 0.162$ kg) of the smoked fish during the storage ( $p > 0.05$ ). Therefore, results revealed that PAHs penetrate in to the center part of the smoked fish during the storage. By using different storage conditions and storage days can minimized the accumulated PAHs in smoked fish.

Keywords: Polycyclic Aromatic Hydrocarbons, Smoking, Storage Conditions, Physiochemical parameters