LITHUANIAN UNIVERSITY OF HEALTH SCIENCES

International **Summer School** Practice

Comparative Evaluation of Biogenic Amine Formation in Various Commercial Fish Products

Fish and fishery products are essential components of a healthy human diet, yet they are highly perishable due to high moisture, neutral pH, and abundant free amino acids. Upon harvest, fish tissue undergoes rapid microbial and enzymatic degradation, leading to the accumulation of biogenic amines such as histamine, putrescine, and cadaverine through bacterial amino acid decarboxylation. Histamine is a critical food safety hazard capable of inducing scombroid poisoning, leading the European Commission (Regulation EC No 2073/2005) to enforce strict regulatory limits. Other biogenic amines like putrescine and cadaverine can potentiate histamine toxicity and serve as chemical indices for raw material freshness. The rate of biogenic amine formation is governed by post-harvest processing; while fresh fish requires an unbroken cold chain to prevent microbial activity, thermal processing (cooking) destroys microflora but leaves heat-stable biogenic amines intact, and commercial canning permanently inactivates enzymes, reflecting the hygienic quality of the raw material prior to sealing.

This scientific summer internship aims to comparatively evaluate the profile and concentration of biogenic amines in commercially available fish products across three processing categories: fresh, cooked, and canned. Commercially relevant fish species will be obtained from local retailers and processed into representative experimental batches. Quantification of biogenic amines will be performed using High-Performance Liquid Chromatography (HPLC) coupled with ultraviolet (UV) detection. This study will generate valuable comparative data regarding the chemical safety of seafood and consumer exposure risks. Concurrently, this internship offers hands-on laboratory experience in food analysis, chromatography, and statistical data processing.