Advanced Regional Training Course on Receptor Binding Assay for Amnesic Shellfish Poisoning, 4-9th April 2011, KMFRI-Mombasa, Kenya

Host

Kenya Marine and Fisheries Research Institute (KMFRI)

Sponsor

International Atomic Energy Agency (IAEA) and KMFRI

Experts

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Introduction

Commonly known human illnesses arising from seafoodcontamination are associated with the consumption of low quality fish and fish products, including shellfish. The widely known illnesses are those that are related to fish and fish products that are contaminated with bacteria or other microorganisms. Worldwide, there is lack of awareness on theillnesses caused by fish that are contaminated with marine biotoxins.

Marine biotoxins are a group of natural occurring toxins that sometimes accumulate in fish and shellfish. Many biotoxins are produced by microscopic marine microalgae (i.e diatoms and dinoflagellates) and can accumulate in fish or shellfish thatfeed onthese harmful microalgae. Though the toxins occurnaturally, the frequency and duration of occurrence of harmful algal blooms has increased in the past as a result of pollutionandclimate change.

There are several types of illnesses, caused by ingestion of shellfish that have bioaccumulated marine biotoxins. Some of these illnesses include, Paralytic Shellfish Poisoning (PSP), Amnesic Shellfish Poisoning (ASP), Diarrhetic Shellfish Poisoning (DSP) and Ciguatera poisoning. The focus of RAF 7007 Project is on ASP and PSP while the upcoming Regional training will zero in on ASP toxins.

Amnesic Shellfish Poisoning (ASP) is a human illness caused byconsumption of shellfish containingdomoic acid, a marine biotoxin. Domoic acid is a naturally-occurring amino acid found in some marine microalgae (f.i. *Pseudo-nitzschia sp.)*and can accumulate in a number of filter-feeding bivalve molluscan shellfish such as clams, mussels, scallops and oysters as well as in planktivorous fishes. Thisbiotoxin is not known to be affected by freezing or cooking.

Why radioisotopes?

One of the most widespread methods to detect PSP and ASP toxins ismouse bioassay. It consists of the administration of shellfish extracts and the subsequent recording of typical symptoms caused by the toxins (diarrhoeic symptoms, respiratory arrest, convulsions and death). This approach, however, poses serious problems especially for its low selectivity and

sensitivity, high variability of the responses in different animal strains as well as the use live animals for testing (animal right issues).

The upcoming Advanced Regional Training is aimed at training participants from African member states involved in RAF 7007, on receptor binding assays technique for ASP toxins quantification as an alternative method tomouse bioassay. This method is currently undergoing validation process to be recognized world-wide for safety standards and risk assessment of shellfish toxins.

Additional information on the course can be obtained from the Director KMFRI (director@kmfri.co.ke) or from the Course Director- Mr. Okuku Eric (eokuku@kmfri.co.ke).