

LAO PDR

Ms Sisamouth Phengsakoun

Fisheries Officer

Fisheries Division

Department of Livestock and Fisheries for Lao PDR

I. Introduction

The Department of Livestock and Fisheries (DLF) is responsible for fisheries and aquaculture throughout the country. Under DLF, there is one Fisheries Division (FD) and there is one center known as Namxouang Aquaculture Development Center (NADC) and the center is responsible for the development of aquaculture techniques to farmers and the newest addition to the centre is the Product Quality Control Laboratory, which is responsible for verifying the quantity and quality of fisheries products.

The Fisheries Law is approved by the National parliament in 2009. According to the Fisheries Law, fish processing development and other aquatic animal products, including the verification of the quality and quantity of fisheries products should be carried out before disseminating to the consumers to ensure the quality and safety of fish and fisheries products for food security within the country.

Lao PDR does not have adequate facilities and there are insufficient equipments as well as limited human resources to carry out biotoxins analysis. However, under the collaboration of Japanese Trust Fund II (JTF II) with Southeast Asian Fisheries Development Center/ Marine Fisheries Research Department (SEAFDEC/MFRD), Singapore, the Biotoxin Monitoring in ASEAN project was organized. The survey on biotoxins monitoring was conducted in Lao PDR, together with collaboration work done

with the Department of Fisheries, the Fish Inspection and Quality Control Division.

II. Objectives and Goals

The objectives and goals of this project are to strengthen the ASEAN capacity in detecting the outbreak of biotoxins in ASEAN countries and to enhance the laboratory for the analysis of biotoxins in bivalve molluscs.

III. Survey Methodologies

a. Sampling Method, Sampling Site, Target Species, Number of Samples & Sampling Size

With regards to the sampling collection in Lao PDR, most marine products are imported from neighbouring countries. Therefore, the collection of imported Green Mussels (*Perna viridis*) samples is of great importance for laboratory analysis, especially under the project Biotoxins Monitoring in ASEAN.

Green Mussel (*Perna viridis*) samples are being collected from the market area. The selected sampling site is the Thongkankham market located in Vientiane, Lao PDR. It is a big wholesale commercial market which sells mainly imported marine products. The target species are imported Green Mussels (*Perna viridis*). Other than the green mussels, blood cockle is also one of the species that is imported from the neighbouring countries. 12 samples were

collected and the sampling size was 1kg per sample.

b. Method of Analysis

The outside of the shellfish sample (Green Mussel (*Perna viridis*)), which is collected from the market, is cleaned by rinsing with tap water. Thereafter, the shellfish is pried open and the inside is rinsed with tap water. The tissue is first removed from the shellfish with a knife, then placed in a sieve to drain out the excess water and transferred to a suitable container. The tissue is blended till homogeneous and then stored at temperature $\leq -18^{\circ}\text{C}$.

The two methods of analysis used are Paralytic Shellfish Poisoning (PSP) by Mouse Bioassay (MBA) and PSP by High Performance Liquid Chromatography (HPLC). PSP by MBA is used for the screening of samples and the reference method used is AOAC 1995, Volume II.

For MBA method, quality control is ensured by

first inoculating three mice with reagent blank, and then inoculates five mice with diluted Saxitoxin (STX) standard for the collection of conversion factor. The death time obtained for the mice should be between 5 - 7 minutes.

PSP by HPLC is then used as the confirmation method for the detection of biotoxins in samples. The reference method used is AOAC official method 2005.06. Quality control is ensured through reagent blank. Spiked sample is prepared and duplicate testing is conducted.

c. Limit of Detection & Limit of Quantification

Limit of Detection (LOD) = $0.006\mu\text{g/g}$ (STX)

Limit of Quantification (LOQ) = $0.06\mu\text{g/g}$ (STX)

d. National Regulatory Limits

PSP in shellfish = $0.80\mu\text{g/g}$ (STX)

IV. Results and Discussions

a. Participation in Inter-Laboratory Proficiency Testing & Results

Inter-Laboratory Proficiency Participation	% RSD _R
1. Inter-lab comparison test for PSP by MBA with National Oceanic and Atmospheric Administration (NOAA); United States of America (USA)	18.3
2. Inter-lab comparison test for PSP by MBA with Department of Fisheries Laboratory and Central Laboratory (Thailand) Co., Ltd	8.6

Table L1: Summary of Inter-Laboratory Proficiency Testing Participation

b. Survey Results & Discussion

Sampling Location	Month & Year of Sampling (MM/YYYY)	Analyte Tested	No. of Samples Analysed	Minimum Concentration (ug/100g of meat)	Maximum Concentration (ug/100g of meat)	Average Concentration (ug/100g of meat)
Thongkhammarket, Vientiane Capital, Lao PDR.	September - December 2011	PSP (MBA)	5	Not Detected	< 35 μg STX eq/ 100g	< 35 μg STX eq/ 100g
		PSP (HPLC)	2	Not Detected	-	Not Detected

Sampling Location	Month & Year of Sampling (MM/YYYY)	Analyte Tested	No. of Samples Analysed	Minimum Concentration (ug/100g of meat)	Maximum Concentration (ug/100g of meat)	Average Concentration (ug/100g of meat)
Thongkhammarket, Vientiane Capital, Lao PDR.	January -May 2012	PSP (MBA)	7	Not Detected	< 35µg STX eq/ 100g	< 35µg STX eq/ 100g
		PSP (HPLC)	3	Not Detected	-	Not Detected

Table L2: Survey Results

No biotoxins were detected in all 12 samples of Green Mussel (*Perna viridis*). All bivalve mollusc products are imported from neighbouring countries; hence there is a need to continue to conduct surveys on the biotoxin monitoring activity to ensure food safety, particularly on fisheries products and to ensure that they are liberated from biotoxins contamination.

c. Corrective Actions

-

The suggestions include:

- To establish networks in the Asian region so as to develop the method of analysis and to share information among ASEAN member countries.
- To continue the training course on biotoxins activity to strengthen the capacity of the government authorities in ASEAN countries.

V. Problems and Challenges Encountered

There is a trend of lesser consumption of Green

Mussels (*Perna viridis*) in Lao PDR. As green mussel is not the most popular type of shellfish consumed in Lao PDR, and the imported quantity is based on the amount of customer's order, thus the collection of sample is restricted. During the period of conducting the survey, the maximum order is 10kg per week and the minimum order is 3kg per week. Due to time constraint, the frequency of the sample collection will be required once every month and the dates and times for sample collection could not be fixed.

VI. Recommendations and Suggestions for future Follow-up action

There should be establishment of network in the Asian region to develop methods of analysis and sharing information within ASEAN countries. Training course on Biotoxins activity should be conducted to strengthen the capacity of the central and local government officers particularly the laboratory staffs in ASEAN member countries. There should be a training courses on the analysis of Biotoxins and multiple shellfish species should be targeted for analysis.