

Role of Bio Toxins in Marine Life

Ivanov Carmel *

Department of Fisheries, University of British Columbia, Vancouver, Canada

DESCRIPTION

Bio toxin is any toxin conveyed by a living being (plant, creature, organism, microorganisms). The poisons created by different marine creatures can be summed up as: *Dinoflagellates*-*Pfiesteria*, Ciguatera, *Fungi-Stachybotrys*, *Fusarium*, Bacteria-*Pseudomonas fluorescens* Spirochetes-Borrelai (Lyme infection) Blue-Green Algae-Microcystis. The hypnozygote is the immobile form of some dinoflagellates. These cysts sink to the bottom of the sea and accumulate at the borderline of water and sediment where they overwinter. When suitable conditions develop the cysts and reinoculate the water with swimming cells that can subsequently bloom. In this way the survival of certain dinoflagellates from one season to other season is assured which later form toxins.

The most important marine phycotoxins are shell fish and ciguatoxins. Till now, 5 groups of shellfish toxins have been distinguished like paralytic shellfish toxins causing paralytic shellfish poisoning, Diarrhoeic shell fish toxins causing diarrhoeic poisoning, amnesic shellfish toxins causing amnesic shellfish poisoning, neurotoxic shell fish toxins causing neurotoxic shellfish poisoning, azaspiracid shellfish toxins causing azaspiracid shellfish poisoning.

Ciguatoxins cause ciguatera fish poisoning are caused by human consumption of contaminated shellfish products, consumption of subtropical and tropical marine carnivorous fish that have accumulated ciguatera toxins through the marine food chain. Various aspects of these toxins were identified.

Paralytic shellfish toxins poisoning in humans is caused by ingestion of shellfish containing PSP toxins. These toxins are accumulated by shellfish grazing on algae producing these toxins. Symptoms of human PSP intoxication vary from a slight tingling or numbness to complete respiratory paralysis. In fatal cases respiratory paralysis occurs within 2 to 12 hrs of consumption of the paralytic shellfish toxin contaminated food.

The paralytic shellfish toxins are a group of 21 closely related tetrahydropurines. The first paralytic shellfish toxin chemically characterised was saxitoxin. The various paralytic shellfish toxins significantly differ in toxicity with saxitoxin being the most toxic. The various paralytic shellfish toxins are produced mainly by dinoflagellated belonging to the genus *Alexandrium* which may occur both in the tropical and moderate climate zones. Shellfish grazing on these algae can accumulate the toxins but the shellfish itself is rather resistant to harmful effects of these toxins. During the last 20 years there seems to have been an increase in toxication caused by paralytic shell fish toxins. However as yet it is unclear whether the increase is real, whether it could be a consequence of improved identification, detection and medical registration or whether it is due to expanded shellfish culture and consumption. A few dozen countries have regulations for paralytic shellfish toxins. Most regulations are set for paralytic shellfish toxins as a group.

The paralytic toxins form a group of closely related tetrahydropurine compounds that make up 4 subgroups which are named as carbamates, gonyautoxins, N-sulfo carbonyl, decarbonyl, components. At least 21 paralytic shellfish toxins mainly from marine dinoflagellates and shellfish that feed on toxic algae have been identified. Attempts to isolate paralytic shellfish toxins began more than 100 years ago but their occurrence as mixtures of compounds with different ionisable functionalities complicated isolation procedures and early progress was slow. The development of ion-exchange chromatography guided by mouse bioassays eventually led to the isolation of a water soluble basic toxin and later named as trivial saxitoxin. The first crystalline derivative of saxitoxin was synthesized and the structure was studied. By means of x-ray crystallographic and nuclear magnetic resonance spectroscopic studies the structure of saxitoxin.

Correspondence to: Ivanov Carmel, Department of Fisheries, University of British Columbia, Vancouver, Canada, E-mail: carmel@ivanov.ubc.uk

Received: August 05, 2021; **Accepted:** August 19, 2021; **Published:** August 26, 2021

Citation: Carmel I (2021) Role of Bio Toxins in Marine Life. Fish Aqua J.S3:003.

Copyright: © 2021 Carmel I. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.