



SAXITOXIN AND TETRODOTOXINS PUFFERFISH TOXINS

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Abstract

Pufferfish poisoning is generally caused by digestion of a toxin called tetrodotoxins which is found naturally and generally in some pufferfish species but also some other species e.g., gastropod mollusk, the eggs of horseshoe crabs, skin of atelopid frogs, blue-ringed octopus. On the other hand, saxitoxin is generally known to be caused by toxic shellfish. Saxitoxin and tetrodotoxin are two toxins which are generally known to be found naturally in some pufferfish species and some shellfish become toxic after feeding on saxitoxin-producing microalgae. These toxins have some similarity in terms of toxicity. However, there are some certain criteria make them distinguish from each other. These two toxins block sodium channels of nerve and muscle membranes at nanomolar concentrations. Even though saxitoxins are chemically different from tetrodotoxins, they both neurotoxins which produce similar symptoms e.g. numbness and tingling around the mouth, salivation, nausea, vomiting which generally appear in 10-45 minutes and these symptoms may progress to paralysis, loss of consciences, and respiratory failure, and may lead to death. Some scientific studies showed that tetrodotoxins might be a future pain killer in pharmacy because it has therapeutic agent for pain besides lethal toxic effects. On the other hand, pufferfish species are the raw materials of many dishes in many countries especially in Japan, China, Taiwan, Korea but not in Turkey. However, these fish are generally encountered in fishery of Turkish fishermen who don't want to have these fish because they give a potential damage in their nets, take extra time to get rid of them, and cannot sell them due to not concerning as a consuming products in their regions. Pufferfish species in Turkish coastal can be considered as raw material for pharmacy and commercial products for those countries that use these fish as their traditional dishes.

Keywords: Saxitoxin, tetrodotoxins, pufferfish, traditional dishes, pharmacy