



Seafood Health Facts: Making Smart choices

Balancing the Benefits and Risks of Seafood Consumption

Resources for Healthcare Providers and Consumers

Toxins [1]

Introduction

Some species of naturally occurring marine algae (phytoplankton) have the ability to produce toxins that can cause consumer illness. These toxins can accumulate in fish and shellfish that feed on the algae. As large fish eat smaller fish, some of these toxins can accumulate to higher levels in large fish at the top of the food chain. Humans can ingest these naturally occurring toxins by eating shellfish like clams, oysters and mussels, the internal organs of crustaceans like crabs and lobsters, or certain species of fish harvested in areas where toxin producing algae have bloomed. Another type of toxin, called histamine or scombrototoxin, can be created when certain types of fish are temperature abused after they are caught.

Shellfish Toxins

Bivalve molluscan shellfish like clams and oysters obtain food by pumping water through their system and filtering out small organisms. If large numbers of the toxic algae are present in the water, then the shellfish can accumulate high levels of the toxin. One example of a toxin producing algae bloom is the “red tide” which produces a toxin that can cause Paralytic Shellfish Poisoning. The potential safety risks associated with toxins in raw bivalve shellfish are usually directly related to the quality of the waters in which they have lived. The FDA and coastal state governments oversee a program that sets standards for shellfish growing waters and ensures that these waters are regularly tested. This system, called the National Shellfish Sanitation Program, is designed to ensure that shellfish harvested from certified waters do not contain these naturally occurring toxins. This program has helped protect consumers for many years and large amounts of raw clams and oysters are consumed without incident.

Fish Toxins

Ciguatera is a toxin produced by certain types of marine algae found in tropical and subtropical areas of the world. It can accumulate in large reef fish that eat other fish like barracuda, jacks, king mackerel and large groupers and snappers. Regulatory authorities and fishermen must be aware of the areas where this toxin has been found and ensure that fish are not harvested from those areas. Visitors to tropical parts of the world should be wary of eating fish from reef areas if they are unaware or unsure of the safety of the local waters.

Scombrototoxin is the only fish toxin not associated with the waters in which the fish lived. Rather, it is caused when the humans who catch certain types of fish expose the fish to high temperatures for extended periods of time after they are caught. Fish species like, tuna, mackerel, bluefish, mahi-mahi, jacks, herring, and marlin have larger amounts of a naturally occurring amino acid in their flesh that can be converted to histamine. This conversion occurs when spoilage bacteria grow rapidly because the fish are exposed to high temperatures for an extended period of time. Since the toxin is not destroyed by cooking, this food safety hazard must be prevented by making sure that these types of fish are kept cold (below 40°F) on ice or under refrigeration from the time that they are caught until they are eaten.

Tips to Minimize Risk

The following tips can help reduce potential risks associated with fish and shellfish toxins.

Always buy all seafood, especially clams, oysters, and mussels from a reputable dealer.

Use caution if you harvest bivalve shellfish or tropical reef fish yourself. Obey posted warnings and check with local authorities to verify that the waters are certified for fish or shellfish harvesting

before you harvest them or decide to eat them.

Handle fish properly. Keep seafood below 40°F at all times using ice or adequate refrigeration. This is especially important for species like tuna, mackerel, bluefish, mahi-mahi, jacks, herring and marlin whether you purchase them or catch them yourself.



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