

Ciguatera

What is Ciguatera?

Ciguatera is a unique type of food poisoning caused by the consumption of marine species that harbor natural toxins originating in certain tropical waters. These species and locations are linked by a food chain, which generates and accumulates a heat-resistant, acid-stable collection of toxic substances known as ciguatoxin. The initial culprits are certain species of microplankton or dinoflagellates that form the toxins that higher-order predators and man consume. These natural toxins can concentrate as they move up the food chain, but their adverse effects appear limited to man.

Ciguatera illness generally occurs in the tropical regions of the world. Occurrence in the United States has remained somewhat constant during the past two decades, but expanding distribution of tropical fishes and increasing vacation travel could pose additional threats. Presently, ciguatera is relatively limited in the United States and occurs less often than many common food bacterial poisonings, but it still ranks among the top four annually reported seafoodborne illnesses.

Where Does Ciguatera Occur?

Ciguatera occurs in marine waters near tropical reefs. The common boundaries referenced are for tropical reef waters between latitudes 35° south and north. Within these areas the occurrence is unpredictable and patchy, both in distribution and time. The majority of reefs are not ciguatoxic and outbreaks are usually localized. Thus, knowledge of the ciguatoxic areas or reefs is usually based on the local experience of fishermen and consumers.

Ciguatera is not a concern for fish caught in South Carolina waters, but should be a consideration for people traveling to Caribbean areas. Based on

seafood origins, primary areas of occurrence for the United States are Hawaii, Guam and Puerto Rico where fish from tropical sources are consumed.

Which Seafoods Can Be Ciguatoxic?

Potentially any tropical marine fish participating in a food chain with ciguatoxin could become ciguatoxic, but documented illnesses and some recent analyses indicate certain fish are more suspect. In the Caribbean region, the fish with the worst reputation are amberjacks and other jacks, moray eels, and barracuda. Fish with questionable reputations are hogfish, scorpion fishes, certain tigerfish, and certain snapper and groupers.

Unfortunately, the usefulness of a list of ciguatoxic fish is questionable because of the diversity of fish species and the variety of names used. For example, local fisherman may refer to a variety of fish as "jacks" or "snappers" when they are actually a mackerel, wrasse or other species. Certain species of snapper and grouper are not a risk for ciguatera, yet their popular reputation suffers because they are misidentified.

How is Ciguatera Identified?

There is no simple, reliable test kit available to the public at this time. Thus, determinations for ciguatera usually are limited to diagnosis based on symptoms. Symptoms following ingestion of a ciguatoxic fish can begin within less than six hours. This rapid onset is a primary reason for close food association and reporting of this seafoodborne illness.

Initial symptoms are gastrointestinal, including nausea, cramping and vomiting. This is followed by neurological discomforts: headaches, flushing, muscular aching and weakness, tingling and

numbing sensation of the lips, tongue and mouth, dizziness, myalgia, and arthralgia. More severe cases have experienced a cold-to-hot sensory reversal such that cold objects feel hot and hot objects feel cold. Victims usually recover within a few days, but severe neurological disorders may persist for months and sometimes for years. Symptoms may reoccur following alcohol consumption or again eating ciguatoxic fish.

The lengthy duration of neurological symptoms is unique, but many of these symptoms are similar for other food poisonings. In the event of food poisoning, consumers should note other foods eaten and try to retain any portions of a meal to better judge the cause. Ciguatera can be blamed as the cause of other forms of food poisoning.

What if You Suspect Ciguatera?

- Consult a physician, explaining your concern, types and amount of food eaten, and when the symptoms began. Rapid diagnosis by a physician and follow-up treatment is important.
- Try to obtain portions of the meal, particularly the fish, to help determine the cause. These portions should be tightly packaged and frozen for any subsequent analysis. Recalling the various foods eaten within 24 hours could indicate other possible causes.
- Try to verify the species and size of the suspect fish and how it was cooked and handled prior to cooking. These concerns are essential to confirming ciguatera versus other food poisonings. The heat-stable ciguatoxin is not destroyed by cooking and frozen storage. Knowledge of prior quality or partial mishandling could implicate a different form of food poisoning caused by

partial spoilage, i.e., scombroid or histamine fish poisoning.

- Consult with other professionals in public health, food safety regulation or academic research, who can better advise your physician. Many physicians are not familiar with ciguatera.

How to Avoid Ciguatera

Ciguatoxic fish cannot be detected by appearance, taste or smell. Raw and cooked whole fish, fillets or parts have no signs of spoilage, discoloration or deterioration.

Thus, prior knowledge of potential ciguatoxic areas and fish remains the best source of caution in avoiding this unique form of food poisoning. Consumers purchasing tropical marine fish from reef waters should frequent reputable dealers and restaurants. Vacationers and experienced recreational fishermen should exercise caution in areas of concern for particular tropical species. Consumers should not eat foods prepared from the heads or internal portions of tropical reef fish species.

Source:

National Food Safety Database. Ciguatera. Prepared by Steven Otwell, December 1989.

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