

Risk of ciguatera fish poisoning: impact on recommendations to eat more fish

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Aims - To characterize the risks of Ciguatera Fish Poisoning and to consider whether dietary recommendations need refining in view of those risks.

Background - Regular fish consumption has been recommended for both primary and secondary prevention of cardiovascular disease. Ciguatera Fish Poisoning (CFP) is the most frequently reported intoxication resulting from fish consumption in Australia. The ciguatoxin are produced by the unicellular *Gambierdiscus toxicus*, a component of plankton typically associated with bleached coral reefs. The clinical syndrome included gastrointestinal and prominent neurological symptoms. Regular fish consumers may accumulate a subclinical toxin level, and may be at increased risk of developing clinical and/or recurrent CFP.

Method - Medline, USDA, AFFA, CSIRO and AHA databases and websites search.

Results - Cold water fish species do not constitute a CFP risk and have a favorable long chain n-3 fatty acid profile, (Tuna, Atlantic Salmon, Blue-eye and Sardines). Warm water mackerels and reef fish, particularly Coral Trout pose the most significant CFP risk.

Conclusions - Recommendations regarding fish intake ought to include consideration of CFP as risks may outweigh benefits for some fish species.

Recommended fish intake is potentially dangerous due to high methylmercury content of certain fish

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Objective - To determine if dietary recommendations to increase fish intake should be modified to minimize the potential risk of methylmercury (MeHg) toxicity.

Background - The American Heart Association (AHA) and Australian Heart Foundation recommend that all adults eat, preferably oily, fish at least twice a week. Fish ingestion is the dominant MeHg exposure pathway. Excess MeHg ingestion can be toxic.

Method - Database/website searches: Medline, United States Environmental Protection Agency (USEPA), World Health Organisation (WHO), Food Standards Australia New Zealand (FSANZ).

Results - MeHg varies markedly between species. Highest levels are in large predators eg. Swordfish/Shark and in some locations eg Geothermal lake in New Zealand, fresh water lakes in Finland. MeHg levels vary within a species similarly in Australia and USA. FSANZ upper limit is 5.0ug/kgbodyweight/week. National Nutrition surveys in Australia (1995) and New Zealand (1997) found 20-25% ate fish at least once/week and high consumers 298-372 grams/meal. 36% of Maoris eat fish at least once/week. Some individuals (especially women of child bearing ages and children) would exceed upper limits of intake of MeHg. In USA 10% of childbearing women would exceed by 2-fold USEPA recommendations.

Fish Species	Mercury* (µg/200g serve)	Max. Serves/week [†] (WHO rec.)	Max. Serves/wk [†] (USEPA rec.)	n-3 content (g/serve)	Serves/wk for 7g n-3 fatty acid
Swordfish	200	1.15	0.25	6.44	1.08
Shark	192	1.20	0.26	1.69	4.15
Salmon	7	33	7	4.29	1.63

[†]70 kg person *Estimates from US FDA tables, USA serve=200gm. FSANZ serve=150gm

Conclusions - Recommendations to limit fish intake to prevent MeHg toxicity are in conflict with recommendations to prevent CHD. Species and origin of fish needs to be taken into account to prevent MeHg toxicity.