

High levels of toxic mercury in some species of shark meat, fins pose dangers to human health

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Shark fins and meat from hammerhead sharks pose a health risk to consumers—especially women of childbearing age—and should not be

sold because of their dangerously high levels of toxic mercury, according to a new study.

Laura García Barcia, a Florida International University (FIU) Ph.D. candidate in the Predator Ecology and Conversation lab, collaborated with a team of scientists from the United States and Hong Kong to assess the health risks of eating shark-derived products. They focused on one of the biggest safety concerns associated with consuming shark derived products—[mercury](#). Most of the [meat](#) and fin samples tested had mercury levels surpassing local legal safety limits, while the greatest risk to consumers is from hammerhead shark products.

"For many communities around the world, shark-derived products are an important source of protein—and that's why we need to get a better idea what health risks might be facing those communities," García Barcia said. "After [the first study we did in 2020](#), the next question we wanted to answer was how many bowls of shark fin soup—or how much shark meat—you can have without consuming too much mercury."

First, the team needed some fins sold for human consumption. Luckily, they had fin trimmings on hand, previously collected from markets in China and Hong Kong as part of a larger, ongoing project to understand the [species composition of the global shark fin trade](#). For this study, the team tested mercury levels in the nine most common shark species in the fin trade—since these would most likely end up in a bowl of shark fin soup. Out of the 267 fin trimmings, 75% exceeded the Hong Kong Center for Food safety's maximum legal limit of 0.5 parts per million (ppm) of methylmercury, the organic and highly toxic form of mercury.

Hammerhead species had the most staggeringly high amounts of mercury. Great hammerhead fins had the highest methylmercury levels, ranging from between 0.28 and 26.24 ppm. Scalloped hammerhead fins had 0.26 to 10.20 ppm, and smooth hammerhead fins between 0.17 and

25.53 ppm. Some hammerhead samples were over 20 times the limit of 1 ppm.

Coincidentally, these sharks are also the most sought after and valuable in the global fin trade, as Demian Chapman—director of the Sharks & Rays Conservation Program at Mote Marine Laboratory & Aquarium and adjunct professor at FIU—points out.

"Hammerheads are one of the premium species in the fin trade, yet the high-end consumers who buy them probably don't realize that by purchasing the most expensive fins they actually are putting themselves and their guests at the greatest health risk," said Chapman, who is also one of the study's authors. "The fin trade has contributed to the high extinction risk faced by the hammerhead sharks, yet trading these species in particular also puts consumers at risk. It's a lose-lose scenario for people and wildlife."

To answer the rather complicated question of how many bowls of shark fin soup could be potentially dangerous, many factors must be considered. García Barcia consulted reports on local consumption rates, then factored in other variables, like the average body weight of consumers, to calculate potential [health risks](#) from consuming the soup.

Typically, shark fin soup is reserved for special occasions, so people only have anywhere between one to six bowls a year. However, researchers warn, hammerhead fins have such high levels of mercury that it's advised to limit these species, in general.

While the global shark fin trade has contributed to a rise in shark fishing—including illegal shark fishing and trade—recent reports show demand for shark meat across the world is also growing. In fact, the meat trade is beginning to surpass the fin trade in volume and value. This change poses questions into how shark meat could also introduce

mercury into a person's diet.

The team analyzed 33 meat samples sold in Trinidad and Tobago, where shark meat is frequently consumed. Scalloped hammerhead and Atlantic sharpnose shark meat had the highest levels of mercury, surpassing local safety consumption limits of 1 part per million—and should be avoided, particularly by anyone who relies on a lot of shark meat in their diet. Some hammerhead samples were two to three times the 1 ppm limit.

High levels of mercury have well-known impacts on humans. Prolonged exposure to mercury can lead to brain and central nervous system damage. It can also interfere with fetal cognitive development. While mercury is common in most seafood, sharks are close to the top of the food chain and can also grow to be quite large, so they tend to accumulate more, in the form of methylmercury.

Most health advisories focused on the risk of mercury toxicity in shark products are treated with a broad brushstroke, listing all shark species. But as this study shows, certain species—like hammerheads—pose a greater risk than others. This study aims to better inform consumers of the species-specific risks of consuming shark-derived products. The hope is these findings can encourage the creation of more species-specific advisories for meat and fin products.

"The differences in health risk between species is striking and we encourage both governments and consumers to start questioning what species end up on a plate," García Barcia said.

The findings were recently published in *Exposure & Health*.

More information: Laura García Barcia et al, Health Risk Assessment of Globally Consumed Shark-Derived Products, *Exposure and Health* (2022). [DOI: 10.1007/s12403-022-00500-5](https://doi.org/10.1007/s12403-022-00500-5)

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