

Seafood safety: A need for greater awareness

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Abstract

Although seafood consumption is recommended as part of a healthy diet, several marine biotoxins are present in seafood, which are associated with adverse health effects such as gastrointestinal and neurological symptoms and, therefore, pose unique food safety concerns. Given that global seafood consumption has increased and is expected to increase further along with increasing interest in reducing meat consumption also as part of commitments to climate change, oversight of seafood quality should be a priority to prevent future contamination. In this editorial, several measures are recommended that should be taken to ensure consumer seafood safety.

Keywords

Seafood consumption, marine biotoxins, foodborne illness, seafood safety, human health

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Seafood consumption is consistently recommended as part of a healthy diet.^{1,2} Compared with red meat, seafood provides high-quality proteins, n-3 polyunsaturated fatty acids (PUFAs), and other nutrients, such as minerals, trace elements, and vitamins, but for example, cooked shrimp has fewer calories per kg (990) and far less saturated fat (1 g).³ Global seafood consumption has more than doubled over the past 50 years, to about 20.5 kg per capita in 2020.⁴ Rapid population growth and income increase in some developing countries and growing health consciousness in developed countries have contributed to this worldwide increase in the consumption of seafood.⁵ With increasing interest in reducing meat consumption also as part of commitments to climate change and recently outlined by the National Food Strategy in the UK,⁶ there is potential for this consumption to increase further. It is therefore imperative to ensure that seafood is safe.

Despite the associated health benefits, there remain many marine biotoxins present in seafood, which are naturally occurring chemicals caused by certain types of toxic algae, that have been linked to adverse health effects such as gastrointestinal and neurological symptoms and, therefore, pose unique food safety concerns.⁷ According to the World Health Organization (WHO), foodborne illnesses are responsible for about 600 million cases and 420,000

deaths each year.⁸ In the U.S., data from the Centers for Science in the Public Interest (CSPI) showed that 838 seafood-associated outbreaks with 7298 illnesses occurred during the period 1998 and 2007.⁹ Also, between 2001 and 2010, seafood consumption was responsible for 23% of the reported cases of foodborne outbreaks, and between 2011 and 2014, resulted in 260,000 Americans falling ill.^{10,11} Elsewhere, in New South Wales, Australia, foodborne illness outbreak data for 2005–2015 reported 308 cases and 45 hospitalizations, following seafood consumption.¹² Foodborne illnesses attributed to seafood consumption may also lead to societal impacts such as loss of earnings, disturbance costs to businesses, and costs associated with absence from school for children aged 16 and under.¹³

As new and emerging marine biotoxins are continually being identified¹⁴ and the global demand for seafood continues to grow,⁴ this raises the need for greater awareness

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of ensuring safe, nutritious, and high-quality seafood to consumers. Indeed, oversight of seafood quality should be a priority to prevent future contamination, and we propose several recommendations. First, regulatory agencies of each country must ensure that monitoring programs are effective and up to date with the increasing number of new biotoxins alongside food business operator checks. Second, enhancing transdisciplinary collaborative actions to introduce eco-innovative sustainable strategies is crucial to improve seafood safety. Third, innovative toxicological approaches for seafood safety evaluation are necessary. Improvements in toxin detection methods and increased toxin surveillance programs will also limit human exposure to seafood contaminants. Lastly, efforts are needed to disseminate information to consumers about foodborne diseases linked with seafood consumption, the risks associated with the consumption of this type of food, and appropriate handling practices. This will enable consumers to have a better perception of risk and on the importance of safety practices. These steps are critical to ensure that we do not simply replace the concerns of meat-based diets with those of unsafe seafood diets.

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