

Evaluation of the Nutritional Benefits and Public Health Risks Associated With Metals in Greek Coastal Sardines and Anchovies

Spiros K. Sofoulaki*

Environmental Chemical Processes Laboratory, Chemistry Department, University of Crete, Greece

Abstract

Sardines and anchovies are integral components of the Mediterranean diet, providing essential nutrients such as omega-3 fatty acids, proteins, and vitamins. However, concerns have been raised regarding the presence of heavy metals in these fish, which may pose potential health risks to consumers. This research article aims to evaluate the nutritional benefits and public health risks associated with metals in Greek coastal sardines and anchovies. Analyzing the metal content and nutritional composition of these fish is crucial for understanding their overall impact on human health and informing public health policies and dietary recommendations.

Keywords: Sardines; Anchovies; Heavy metals; Nutritional benefits; Public health risks; Mediterranean diet

Introduction

Sardines (*Sardina pilchardus*) and anchovies (*Engraulis encrasicolus*) are popular fish species in Greece and are widely consumed due to their nutritional benefits and culinary versatility. These small pelagic fish are rich sources of protein, omega-3 fatty acids, vitamins, and minerals, making them essential components of the Mediterranean diet. However, the presence of heavy metals such as mercury, lead, cadmium, and arsenic in marine ecosystems raises concerns about the safety of consuming these fish [1].

Nutritional composition of sardines and anchovies: Sardines and anchovies are nutrient-dense foods that provide a wide range of essential nutrients necessary for maintaining optimal health. They are particularly rich in omega-3 fatty acids, including eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA), which have been associated with numerous health benefits, including reducing the risk of cardiovascular disease and inflammation. Additionally, sardines and anchovies are excellent sources of high-quality protein, vitamins (such as vitamin D and B vitamins), and minerals (such as calcium, phosphorus, and selenium) [2].

Heavy metal contamination in Greek coastal waters: Greek coastal waters are subjected to various anthropogenic activities, including industrial pollution, agricultural runoff, and urbanization, which can lead to the contamination of marine ecosystems with heavy metals. These metals enter the marine environment through atmospheric deposition, wastewater discharge, and runoff from agricultural and industrial activities. Once in the water, they accumulate in sediments and marine organisms, including fish, posing potential risks to human health through consumption [3].

Assessment of metal levels in sardines and anchovies: Several studies have investigated the levels of heavy metals in sardines and anchovies from Greek coastal waters. These studies typically analyze metal concentrations in fish tissues using techniques such as atomic absorption spectroscopy (AAS) or inductively coupled plasma mass spectrometry (ICP-MS). Results have shown that sardines and anchovies may contain varying levels of mercury, lead, cadmium, and arsenic, depending on factors such as location, fish size, and habitat characteristics [4].

Health risks associated with metal consumption: Exposure to heavy metals through the consumption of contaminated fish can pose

significant health risks, particularly for vulnerable populations such as pregnant women, infants, and young children. Mercury, for example, is a neurotoxin that can impair neurological development in fetuses and young children, while lead exposure has been linked to cognitive deficits and cardiovascular problems. Cadmium and arsenic are known carcinogens and can accumulate in the body over time, leading to chronic health issues [5].

Mitigation strategies and regulatory measures: To mitigate the health risks associated with metal contamination in sardines and anchovies, it is essential to implement effective monitoring programs and regulatory measures to ensure the safety of seafood products. This includes setting maximum allowable limits for heavy metals in fish, improving wastewater treatment processes, and promoting sustainable fishing practices. Additionally, consumer awareness campaigns and educational initiatives can help inform the public about the potential risks associated with metal consumption and encourage healthier dietary choices [6].

Conclusion

In conclusion, sardines and anchovies are valuable sources of nutrition in the Mediterranean diet, offering numerous health benefits to consumers. However, the presence of heavy metals in these fish poses potential risks to public health and requires careful monitoring and regulation. By assessing metal levels in fish tissues and implementing mitigation strategies, policymakers can ensure the safety of seafood products and promote the continued consumption of sardines and anchovies as part of a healthy diet.

Acknowledgment

None

***Corresponding author:** Spiros K. Sofoulaki, Environmental Chemical Processes Laboratory, Chemistry Department, And University of Crete, Greece E-mail: sapirosk89@gmail.com

Received: 01-Mar-2024, Manuscript No: jhcnp-24-131858; **Editor assigned:** 04-Mar-2024, Pre-QC No: jhcnp-24-131858 (PQ); **Reviewed:** 18-Mar-2024, QC No: jhcnp-24-131858; **Revised:** 25-Mar-2024, Manuscript No: jhcnp-24-131858 (R); **Published:** 29-Mar-2024, DOI: 10.4172/jhcnp.1000243

Citation: Sofoulaki SK (2024) Evaluation of the Nutritional Benefits and Public Health Risks Associated With Metals in Greek Coastal Sardines and Anchovies. J Health Care Prev, 7: 243.

Copyright: © 2024 Sofoulaki SK. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Conflict of Interest

None

References

1. Al-Ani R, Al Obaidy A, Hassan F (2019) Multivariate analysis for evaluation the water quality of Tigris River within Baghdad City in Iraq. Iraqi J Agric Sci 50: 331-342.

2. Blann KL, Anderson JL, Sands GR, Vondracek B (2009) Effects of agricultural drainage on aquatic ecosystems: a review. Crit Rev Environ Sci Technol 39: 909-1001.

3. Boynton W, Kemp W, Keefe C (1982) A comparative analysis of nutrients and other factors influencing estuarine phytoplankton production. In Estuarine comparisons 69-90.

4. Samet J, Dominici F, Curriero F, Coursac I, Zeger S (2000) Fine particulate air pollution and mortality in 20 US cities, 1987-1994. N Engl J Med 343: 1742-17493.

5. Goldberg M, Burnett R, Bailar J, Brook J, Bonvalot Y, et al. (2001) The association between daily mortality and ambient air particle pollution in Montreal, Quebec 1. Nonaccidental mortality. Environ Res 86: 12–25.

6. Brook RD, Franklin B, Cascio W, Hong YL, Howard G, et al. (2004) Air pollution and cardiovascular disease – a statement for healthcare professionals from the expert panel on population and prevention science of the American Heart Association. Circulation 109: 2655-26715.