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The Estimated Concentration of Microplastics in Humans Due to the Consumption of Branzino (*Dicentrarchus labrax*) & Black Sea Bass (*Centropristis striata*)

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As fish become an increasingly popular source of lean protein, species such as *Dicentrarchus Labrax* and *Centropristis* there is a concern that as these species ingest microorganisms who take in microplastics- a consequence of human plastic pollution -may contain the same microparticles in the white tissue that human beings consume.

Following this path of thinking, the purpose behind this study was to confirm the presence of microplastics in the white tissue of two different species of fish. Considering that fish and seafood are a common source of food for human beings, it's critical how these microparticles could be affecting human health from a nutritional standpoint. To determine this, 30 Branzino and Black Sea Bass were provided from CT City Fish Market & Gulf Shrimp Co. Each whole weight (g) and length (cm) was collected from each fish, as well as any other qualitative data. The digestive organs of each fish were removed, closed, and stored for later research use. A sample of white tissue was then weighed and placed into a beaker with 30mL of 10% KOH. Samples were then placed in an incubator for 48 hours at 60°C. When fully dissolved, samples were filtered using a buchner funnel and re-incubated for 12 hours at 60°C . After incubations, samples were visually analyzed using a dissecting scope.

Results showed that there was an average of 3.86 microplastics per gram of Black Sea Bass and 1.00 microplastics per gram of Branzino. In total, there were 160 microplastic particles found in the white tissue of Black Sea Bass, and 101 discovered in Branzino. Considering that these particles had leached from the digestive tracts of these fish, it can be inferred that the ones indigested by humans are behaving similarly. In fish, microplastic consumption can lead to the physical injury (internal obstruction) of organisms affecting their feeding behavior, reproduction, and growth (Curren et. al). Seeing that a total of 261 microplastics were found during this project, one can only imagine the damage that is being done to the marine biology ecosystem. Additionally, there is preliminary research in this field demonstrating the effects microplastics have on humans, such as an enhanced inflammatory response and disruption of the gut microbiome (Smith et al.), calling for a need for future research.

Looking forward, identifying the types of microplastics present in the white tissue of fish and their corresponding chemical compounds can lead to understanding the chemical affects microplastics may have on living tissues. Following this, analyzing the urine and blood of human beings who commonly eat fish vs. uncommonly eat fish for microplastic content would further prove that the nutritional quality of food is decreasing due to marine plastic pollution. Truly, any additional work in these fields would provide further insight on how microplastics affect human health, potential FDA regulations and policies, and Public Health interventions.

Works Cited

Curren, Emily, et al. “Evidence of Marine Microplastics in Commercially Harvested Seafood .” *Evidence of Marine Microplastics in Commercially Harvested Seafood* , vol. 8, Dec. 2020. *Frontiers* , www.frontiersin.org/articles/10.3389/fbioe.2020.562760/full. Accessed 9 Mar. 2023.

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