Are There Microplastics in Fast-Food?

Cullen, Molly (School: Bishop Feehan High School)

Microplastics (MPs) are everywhere in our daily lives, air, water, and the food chain. Research conducted around the world has confirmed the presence of MPs in water, salt, and other food that humans consume. A TikTok video claimed a McDonald's chicken nugget order had MPs. Confirmed MPs in food were reported in the forms of fragments and filaments. This study examined chicken nuggets from four local fast-food restaurants, for these fragments and filaments through microscopy. Two samples were taken from the geometrical center area of each nugget, with about one centimeter apart. Samples are approximately 1 cm x 0.5cm x 0.2cm in size. A total of thirty-two samples were prepared. Two additional home cooked plain chicken were used as the control samples. All were examined using a Swift M6000 microscope under 400 power. Various colored filaments were identified in twenty-eight out of the thirty-two restaurant samples, and none were found from the control group. Those identified filaments are similar in shape and form for all restaurants used in this study. Additional chicken pieces were made to further investigate whether the additives were the causes of the contamination. Sea salt, vegetable oil, starch, and herb seasonings were applied to each chicken piece respectively. No filaments were found in any of these samples. This work showed that there were many filaments in fast-food chicken nuggets. The shape, form and colors of these filaments are comparable to the confirmed MPs in published literature. Further study using FTIR would be needed to determine the chemical compositions of the filaments. This study did not complete microfiltration and extraction of the filaments for FTIR analysis. Therefore, it could not claim MPs were identified in fast-food chicken nuggets.

Awards Won: