MICROPLASTIC IDENTIFICATION AND CLASSIFICATION OF THE FISH GUT FROM THE PATENGA SEA BEACH, CHATTOGRAM

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JUNE 2023

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This is to certify that we have examined the above Master's thesis and have found that is complete and satisfactory in all respects, and that all revisions required by the thesis examination committee have been made

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LIST OF ABBREVIATIONS

Acronym	Definition
MT	Metric ton
MPs	Microplastics
Km^2	Kilometer square
$Particles/m^3$	Particles per meter cube
Items/g	Items per gram
Cm	Centimeter
cm^2	Centimeter square
µm	Micro meter
Ml	Milliliter
Mm	Millimeter
M	Molar
G	Gram
L	Liter
g/cm^3	Gram per cm^3
m^2	Meter square
Df	Degrees of freedom
F	F-value
T	t- value
Sig.	Significance
SE	Standard error
e.g.	Exempli Gratia
ANOVA	Analysis of Variance

ABSTRACT

Bangladesh is one of the countries that could be at risk from microplastic pollution. Only a few studies on microplastics have been conducted in Bangladesh. The study was on the identification and characterization of microplastics from the fish gut *(Harpadon nehereus).* 96 fishes were collected from the Kathgorh bazar, Patenga beach, Chattogram. Sampling was conducted on November, 2022.The fish gut samples were digested using Hydrogen peroxide protocol. The mean microplastic items and mean MPs abundance were 98.34 ± 53.11 items and 18.31 ± 7.17 item/g, respectively. From the One way ANOVA it was estimated that microplastics (MPs) abundance were significantly different among the gut weight size groups ($p = 0.00001$). The highest mean abundance of MPs was found in 0 to 2g gut size class (29.31 ± 6.73 item/g) and the lowest mean abundance of MPs was found in 6 to 8g gut size class (12.36 ± 3.10 item/g). Two different types of microplastics were identified, of which fragments were 40.69% and filaments 59.31%. Five different colors of microplastics were observed, where blue MPs was the most dominant among them (37.57%). Three different shapes of microplastics were examined which were, irregular (29.71%), angular (10.98%) and elongated (59.31%). In this study, the highest proportion of microplastics was found in the size between 500 μm to < 1mm (50.68%). The identification and characterization of microplastics from the fish gut gives an indication of the level of microplastic pollution in the study area.

Keywords: Microplastics, abundance, total items, gut weight, Patenga beach.