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Supplementary File

Microplastic and Heavy Metal Accumulation in Cultured Fish: Concerns for Food Safety

Md Ohidur Rahman, Md Golam Mostafa

Water Research Lab, Institute of Environmental Science, University of Rajshahi, Rajshahi 6205, Bangladesh. * Correspondence: (M.G. Mostafa) mgmostafa@ru.ac.bd

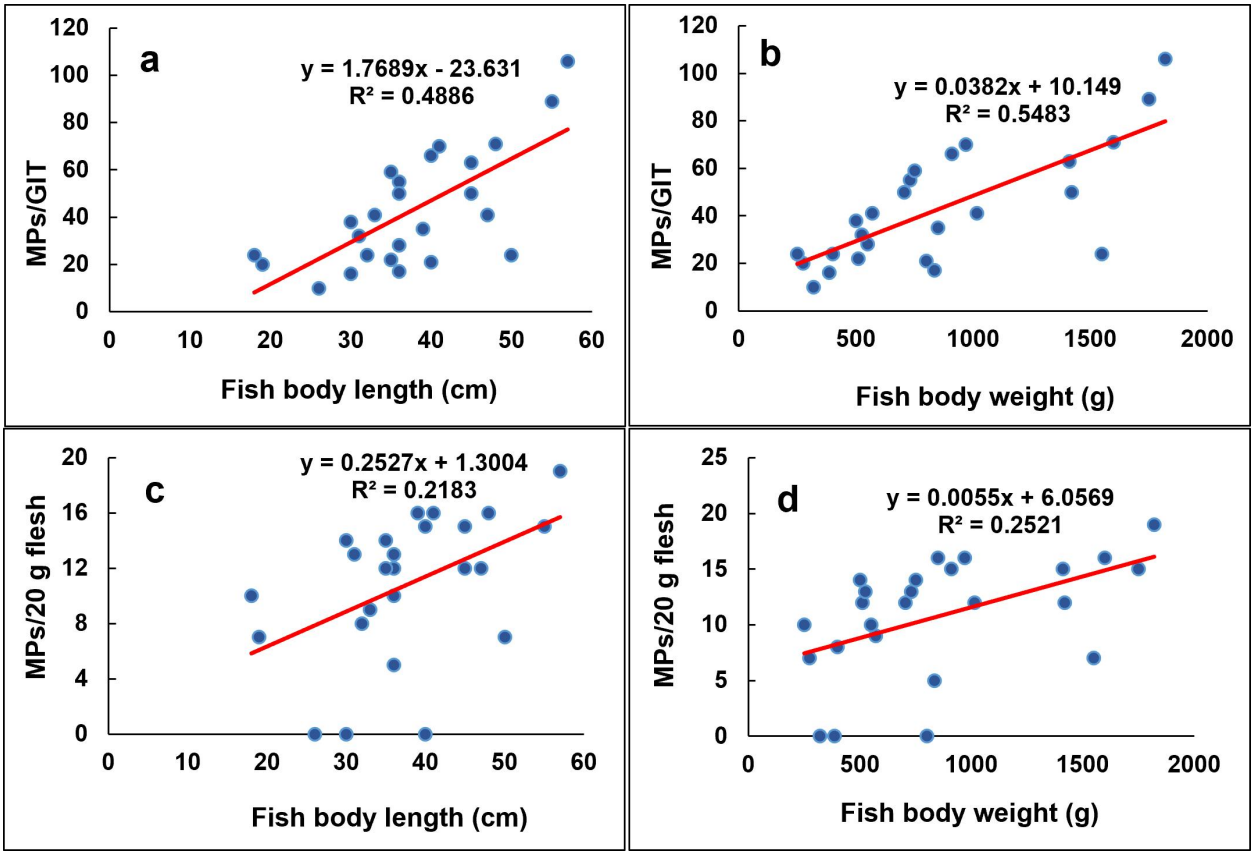

Figure S1. A correlation between the number of microplastics in the GIT and body length (a) and weight (b) and in fish flesh and body length (c) and body weight (d) across different fish species.

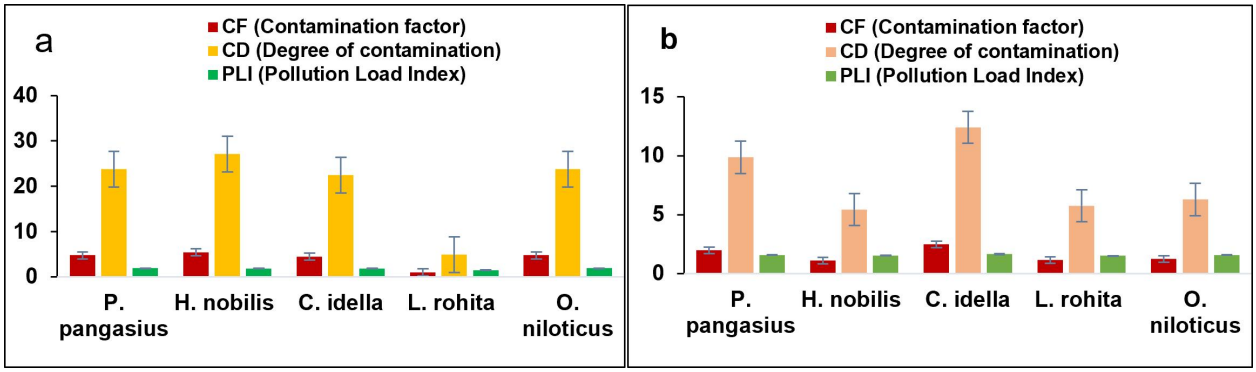

Figure S2: CF, CD, and PLI values of fish GIT (a), and flesh (b).

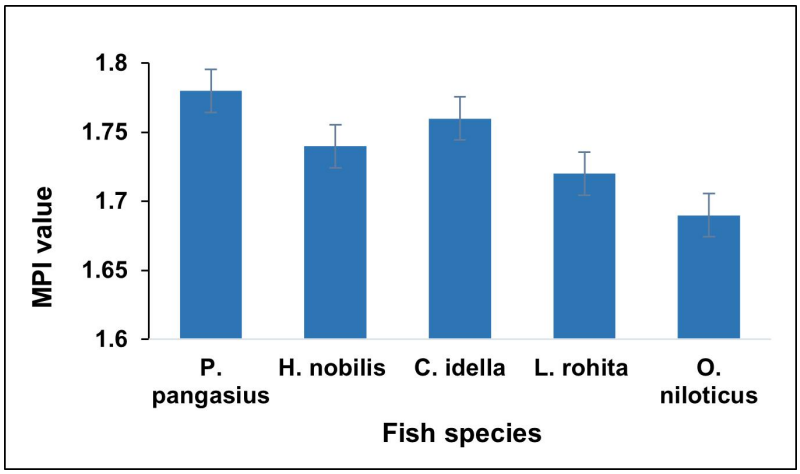

Figure S3. Metal pollution index (MPI) for the flesh of different cultured fish species samples.

Table S1 Details of collected fish species from fish culture ponds.

Fish species common name	Scientific name	No.of individuals	Length range (cm)	Mean length cm ± SD	Wet weight range (g)	Mean wet weight (g) ± SD
Pangus catfish	*Pangasius Pangasius*	5	45-57	51±4.95	1420-1820	1628±159.59
Bighead carp	*Hypophthalmichthys Nobilis*	5	33-45	38 ± 4.64	570-1410	843±327.75
Grass carp	*Ctenopharyngodon idella*	5	35-47	39.8±4.76	750-1015	896±105.91
Rui	*Labeo rohita*	5	30-39	34.4±3.51	365-850	539±187.56
Tilapia	*Oreochromis niloticus*	5	18-31	24.8±6.05	250-525	374±129.2

Table S2. Correlation of heavy metals with fish body length.

	Length(cm)	***Cr***	***Mn***	***Fe***	***Cd***	***Ni***	***Cu***	***Zn***	***Pb***
Length(cm)	1								
Cr	**0.74**	1							
Mn	0.53	0.54	1						
Fe	0.55	0.84	0.59	1					
Cd	0.64	**0.77**	0.58	**0.74**	1				
Ni	0.57	**0.73**	0.34	**0.81**	0.69	1			
Cu	0.11	0.64	-0.09	0.55	0.37	0.64	1		
Zn	0.42	**0.81**	0.44	**0.85**	0.60	0.64	0.65	1	
Pb	0.43	0.67	0.53	**0.78**	0.47	0.55	0.38	**0.72**	1

Table S3. Correlation of heavy metals with fish body weight

	Weight(gm)	***Cr***	***Mn***	***Fe***	***Cd***	***Ni***	***Cu***	***Zn***	***Pb***
Weight(gm)	1								
Cr	**0.67**	1							
Mn	**0.65**	0.54	1						
Fe	0.52	**0.84**	0.59	1					
Cd	**0.63**	**0.78**	0.58	0.74	1				
Ni	0.49	**0.73**	0.34	**0.81**	0.69	1			
Cu	-0.003	0.64	-0.09	0.55	0.37	0.64	1		
Zn	0.37	**0.81**	0.44	**0.85**	0.60	0.64	0.64	1	
Pb	0.37	0.67	0.53	**0.78**	0.47	0.55	0.38	0.72	1

Table S4. Comparison of microplastics concentration studies in different fish species.

Location	**Fish species**	**Concentration of MPs**	**Morphology and major polymers of MPs**	**References**
Jamuna River, Bangladesh	*Wallago attu* *Anguilla bengalensis* *Labeo Calbasu* *Ailia coila, Cirrhinus reba* *Ompok pabda* *Clupisoma garua*	1.80±1.65 particles/GIT	Fiber (70%), film (14%), Black (27%), white (26%), blue (24%), red (17%)	[53]
Bhairab River, Padma River, Turag River, Chandpur, and Mymensingh, Bangladesh	*Gibelion catla, Heteropneustes fossilis, Labeo rohita,* *Mystus tengara,* *Ompok pabda*	1.21±1.13 particles/GIT	Fiber (91%), Transparent, blue < 0.5mm 64.71%, 0.5-1mm 23.53% PE (32.35%), PP (27.94%)	[54]
Buriganga River, Bangladesh		0.65-3.82 particles/g GIT	Fiber, fragment, Blue, and < 0.5mm PET, PE	[27]
Persian Gulf, Iran	*Atropus atropos*	0.147 particles/g GIT	PE and nylon	[55]
Gulf of Manner, Indian Ocean	*Sufflamen fraenatus, Heniochus acuminatus, Atropus atropos, Pseudotriacanthus and Leiognathus brevirostris*	0.12-0.51 particles/g (muscle) and 0.13–0.50 particles/g (intestine)	Fiber, white color, and 100–250 µm PE, PP, and PA	[26]
Fish farmed ponds, Rajshahi, Bangladesh	*Pangasius Pangasius* *Hypophthalmichthys Nobilis* *Ctenopharyngodon idella* *Oreochromis niloticus* *Labeo rohita*	0.99 - 2.15 particles/g GIT and 0.44- 0.69 particles/g flesh	Fiber (57.09%), Fragment (27.74%) Blue (60.37%), red (21.98%) > 0.5mm (76.64%) PE, PP, PET	This study