Supplementary Information for

Humic acid alleviates the toxicity of nanoplastic particles in *Daphnia magna*

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This supporting information contains 7-page document, including one (1) tables, Five (5) figures and this cover page.

Table S1: Constituents of High Hardness COMBO (modified) medium for *D. magna* culture.

No	Chemical	Concentration
	Formula	(g/L)
1	$CaCl_2.2H_2O$	110.28
2	$MgSO_4.7H_2O$	113.5
3	K_2HPO_4	1.742
4	$NaNO_3$	17.0
5	$Na_2SiO_3.9H_2O$	13.267
6	H_3BO3	24.0
7	KCl	5.96
8	$NaHCO_3$	63.0
9	Na SeO_3	40 µg/l
10	LiCl	31
11	RbCl	7.0
12	$SrCl_2.6H_2O$	15
13	NaBr	1.6
14	KI	0.33
15	Biotin (*d*-biotin)	10 mg into 96 ml of dH_2O
16	B_{12} (cyanocobalamin)	10 mg into 89 ml of dH_2O

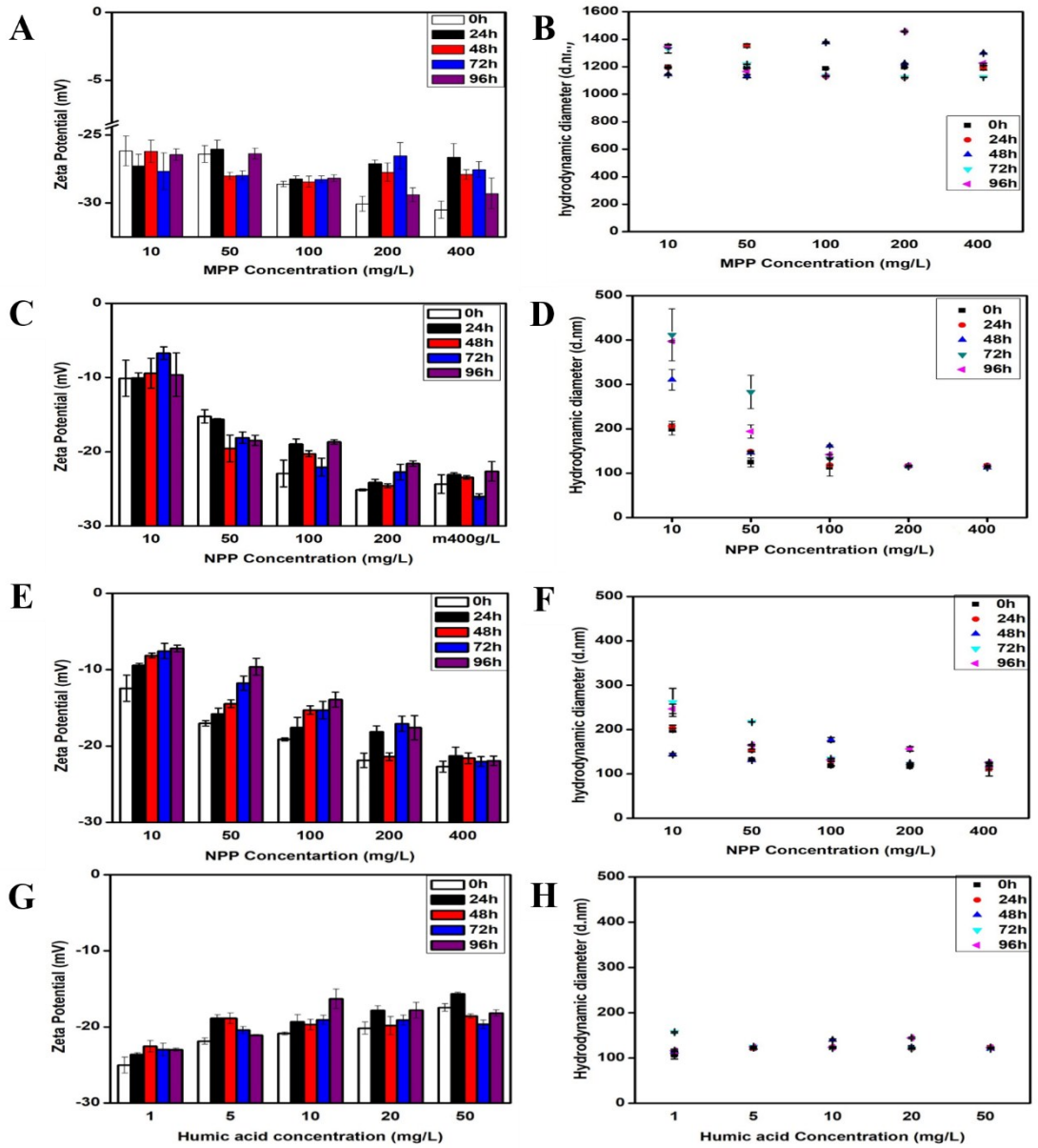

Figure S1. Zeta potential and hydrodynamic diameter measurement of MPP and NPP in constituted media at the time points of 0, 24, 48, 72, and 96h. (A) Zeta potentials of MPP in varied concentrations; (B) Corresponding hydrodynamic diameters of MPP in (A); (C) Zeta potentials of NPP in varied concentrations; (D) Corresponding hydrodynamic diameters of NPP in (C); (E) Zeta potentials of NPP in varied concentrations in the presence of 5mg/L HA; (F) Corresponding hydrodynamic diameters of NPP in (E); (G) Zeta potentials of 400mg/L NPP suspension in the presence of 1, 5, 10, 20, and 50 mg/L HA; (H) Corresponding hydrodynamic diameters of NPP in (G).

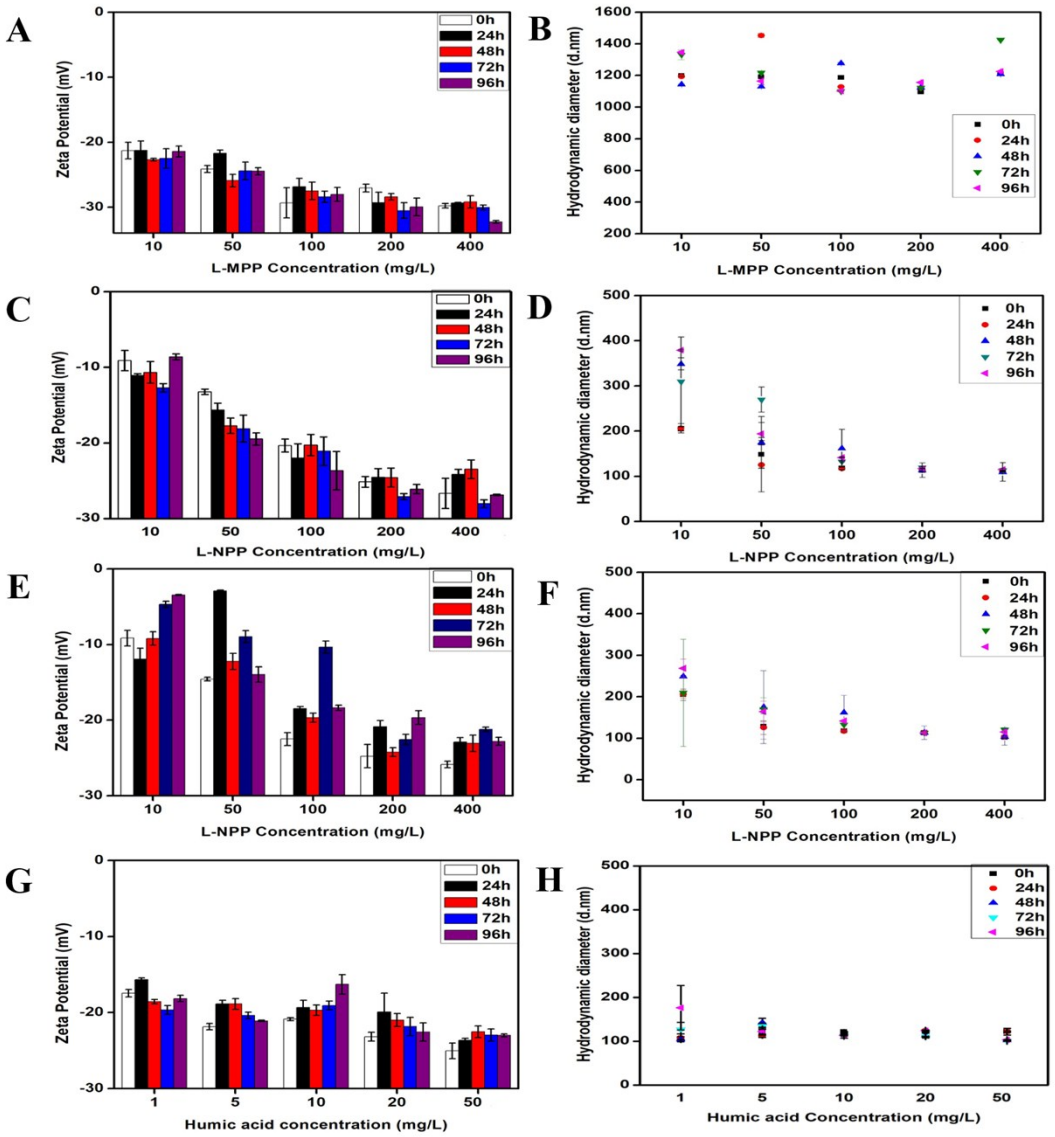

Figure S2. Zeta potential and hydrodynamic diameter measurement of Labelled-MPP and L-NPP in constituted media at the time points of 0, 24, 48, 72, and 96 h. (A) Zeta potentials of L-MPP in varied concentrations; (B) Corresponding hydrodynamic diameters of L-MPP in (A); (C) Zeta potentials of L-NPP in varied concentrations; (D) Corresponding hydrodynamic diameters of L-NPP in (C); (E) Zeta potentials of L-NPP in varied concentrations in the presence of 5 mg/L HA; (F) Corresponding hydrodynamic diameters of L-NPP in (E); (G) Zeta potentials of 400 mg/L L-NPP suspension in the presence of 1, 5, 10, 20, and 50 mg/L HA; (H) Corresponding hydrodynamic diameters of L-NPP in (G).

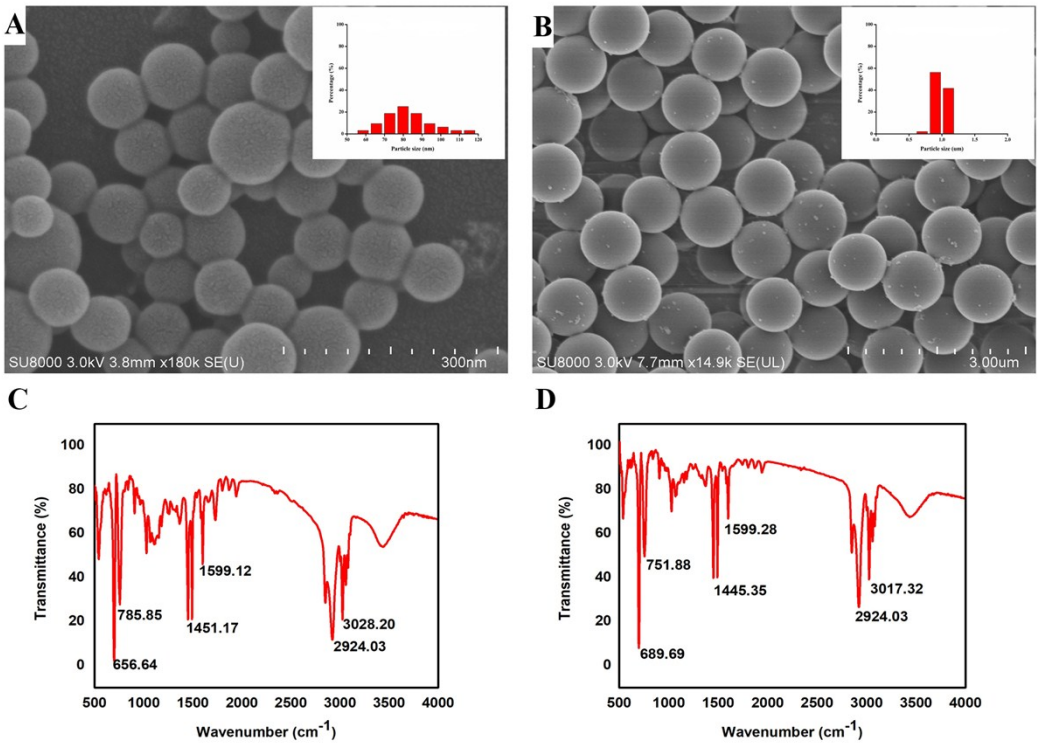

Figure S3. Morphology and FT-IR spectrum of fluorescence-labeled polystyrene MPP and NPP. Representative SEM images of fluorescence-labeled polystyrene NPP (A) and MPP (B) showed uniform spheres with the diameters of ~0.1 μm and ~1 μm (insets) respectively; Typical FT-IR spectrum of fluorescence-labeled polystyrene NPP (C) and MPP (D) showed their characteristic peaks.

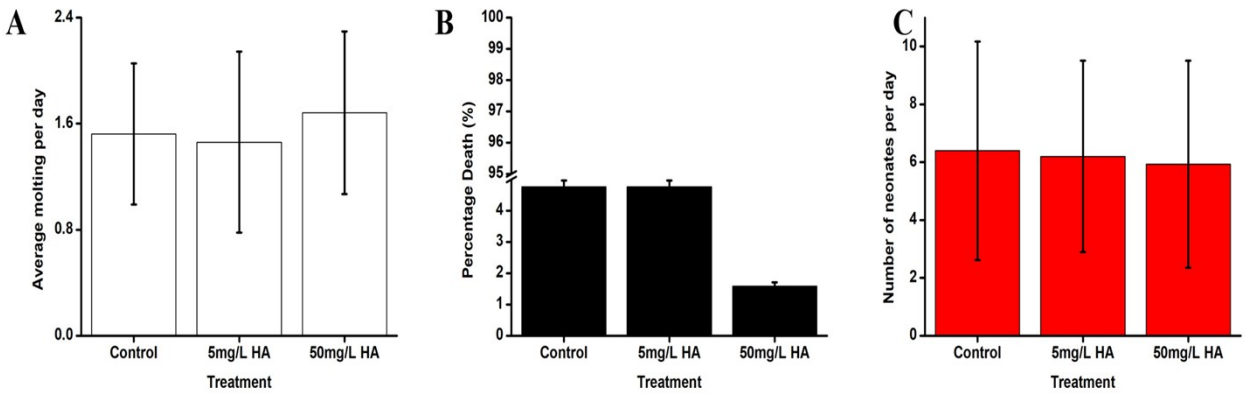

Figure S4. 21-day chronic toxicity of HA in two concentrations (5 mg/L and 50 mg/L) in *D. magna.* Average molting rate (A), Percentage death (B) and Number of neonates per day (C) throughout the experimental period were shown. Data are from three independent experiments (n=3). Error bars represent S.D.

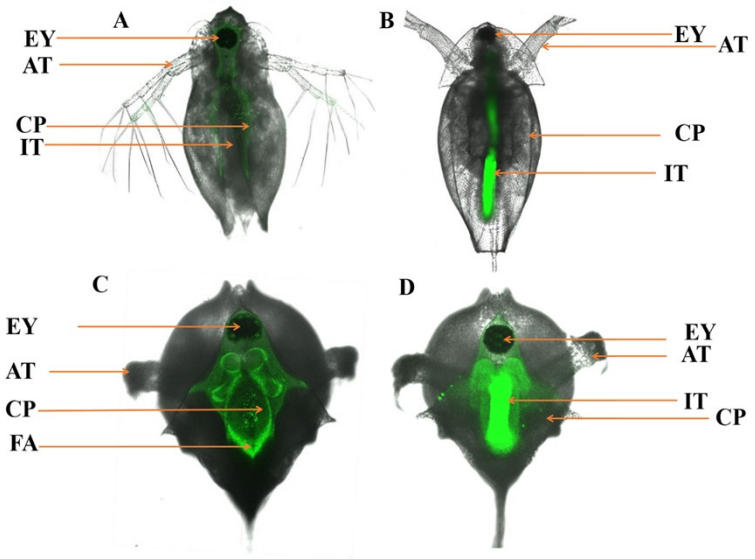

Figure S5. Distribution patterns of fluorescence-labeled polystyrene NPP and MPP in *D. magna* as revealed by laser confocal microscopy. Ventral Views of *D. magna* exposed to fluorescence-labeled polystyrene NPP (A) and MPP (B); Aerial views of *D. magna* exposed to fluorescence-labeled polystyrene NPP (C) and MPP (D). Eye(EY), antenna(AT), carapace(CP), intestinal tract (IT), and filtering apparatus-phyllopods (FA) were indicated in the images.