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Supplementary information

Table S1. Baseline body weight, body weight changes between baseline and the study end, and relative kidney weight at the study end in the seven rat groups. Group 1 (Control): not treated/not exposed. Group 2 (Cd): addition of CdCl2 (50 mg/kg body weight/day) in drinking water for 35 days. Group 3 (Hl): H. lippii (100 mg/kg, by gavage for 35 days). Group 4 (Cd + Hl): CdCl2 exposure (like in Group 2) followed by H. lippii (100 mg/kg, body weight/day by gavage) for 15 days. Group 5 (Ag): Ag NPs (100 µg/kg body weight/day, intraperitoneal injection) for 35 days. Group 6 (Cd + Ag): CdCl2 exposure (like in Group 2) followed by Ag NPs (0.1 mg/kg body weight/day by intraperitoneal injection) for 15 days. Group 7 (Cd+Hl+Ag): CdCl2 exposure (like in Group II) followed by H. lippii (100 mg/kg body weight/day by gavage) and Ag NPs (0.1 mg/kg body weight/day by intraperitoneal injection) for 15 days. ***p < 0.001 vs Group 1; a p < 0.05, b p < 0.01, C p < 0.001: vs Group 2 (n = 5 rats/group).

Rat groups	Group 1 (Control)	Group 2 (Cd)	Group 3 (*Hl*)	Group 4 (Cd+*Hl*)	Group 5 (Ag)	Group 6 (Cd + Ag)	Group 7 (Cd+*Hl*+Ag)
Parameters	Drinking water	$CdCl_2$ in drinking water for 35 days	*H. lippii* by gavage 100 mg/kg for 35 days	*H. lippii* after exposure to $CdCl_2$	Ag NPs by intraperitoneal injection for 15 days	Ag NPs after exposure to $CdCl_2$	*H. lippii* and Ag NPs after exposure to $CdCl_2$
Initial body weight (g)	282±14.7	204.2±21.9	244.8±2.69	247.2±1.1	231.8±15.7	233.8±8.95	234.0±13.0
Body weight gain (g/d)	0.072±0.02	-0.18±0.06***	0.119±0.09	-0.05±0.2[a]	0.042±0.01	0.07±0.009[c]	0.02±0.03[a]
Relative kidney weight (g/100 g body weight)	0.46±0.04	0.55±0.02***	0.43±0.03	0.48±0.01[a]	0.42±0.02	0.48±0.02[b]	0.47±0.01[a]

Table S2. Serum biochemical markers in the different rat groups at the study end. Group 1 (Control): not treated/not exposed. Group 2 (Cd): addition of $CdCl_2$ (50 mg/kg body weight/day) in drinking water for 35 days. Group 3 (*Hl*): *H. lippii* (100 mg/kg body weight/day, by gavage for 35 days). Group 4 (Cd + *Hl*): $CdCl_2$ exposure (like in Group 2) followed by *H. lippii* (100 mg/kg body weight/day by gavage) for 15 days. Group 5 (Ag): Ag NPs (100 µg/kg body weight/day, intraperitoneal injection) for 35 days. Group 6 (Cd + Ag): $CdCl_2$ exposure (like in Group 2) followed by Ag NPs (0.1 mg/kg body weight/day by intraperitoneal injection) for 15 days. Group 7 (Cd+Hl+Ag): $CdCl_2$ exposure (like in Group II) followed by *H. lippii* (100 mg/kg body weight/day by gavage) and Ag NPs (0.1 mg/kg body weight/day by intraperitoneal injection) for 15 days. **p < 0.01, ***p < 0.001 vs Group 1; a p < 0.05, C p < 0.001: vs Group 2 (n = 5 rats/group).

Rat Groups	Serum triglycerides (g/l)	Serum cholesterol (mg/l)	Serum glucose (g/I)	Serum albumin (g/l)
Group 1 (Control)	0.39±0.02	0.62± 0.001	0.86±0.04	30± 0.6
Group 2 (Cd)	0.79±0.01***	0.78± 0.02**	1.13± 0.09**	29.5± 0.28**
Group 3 (*Hl*)	0.65±0.01	0.66± 0.01	0.79±0.05	31± 0.31
Group 4 (Cd+*Hl*)	0.63±0.01c	0.75± 0.01	0.82± 0.10c	31.33± 0.44c
Group 5(Ag)	0.64±0.04	0.62± 0.04	1.03± 0.09	31± 0.56
Group 6 (Cd + Ag)	0.59±0.05	0.63± 0.03a	1.08± 0.009c	29.66± 0.4c
Group 7 (Cd+*Hl*+Ag)	0.40±0.01c	0.75± 0.01a	0.88± 0.06c	30.75± 0.3c

Table S3. Kidney function markers in the seven rat groups. Group 1 (Control): not treated/not exposed. Group 2 (Cd): addition of $CdCl_2$ (50 mg/kg body weight/day) in drinking water for 35 days. Group 3 (*Hl*): *H. lippii* (100 mg/kg body weight/day, by gavage for 35 days). Group 4 (Cd + *Hl*): $CdCl_2$ exposure (like in Group 2) followed by *H. lippii* (100 mg/kg body weight/day by gavage) for 15 days. Group 5 (Ag): Ag NPs (100 µg/kg body weight/day, intraperitoneal injection) for 35 days. Group 6 (Cd + Ag): $CdCl_2$ exposure (like in Group 2) followed by Ag NPs (0.1 mg/kg body weight/day by intraperitoneal injection) for 15 days. Group 7 (Cd+Hl+Ag): $CdCl_2$ exposure (like in Group II) followed by *H. lippii* (100 mg/kg body weight/day by gavage) and Ag NPs (0.1 mg/kg body weight/day by intraperitoneal injection) for 15 days. *p < 0.05, ***p < 0.001 vs Group 1; a p < 0.05, b p < 0.01, C p < 0.001 vs Group 2 (n = 5 rats/group).

Rat groups	Serum urea (g/l)	Serum creatinine (mg/l)	Serum uric acid (mg/l)	Urea/creatinine ratio
Group 1 (Control)	0.50±0.03	4.78±0.08	11.5±0.56	94.04±8.36
Group 2 (Cd)	0.58±0.02*	5.36±0.001***	20.00±0.001*	108.0±11.2*
Group 3 (*Hl*)	0.45±0.022	4.81±0.05	11.33±1.45	94.87±6.72
Group 4 (Cd+*Hl*)	0.47±0.028b	4.25±0.001c	16.25±1.50a	110.9±10.0
Group 5(Ag)	0.46±0.025	4.010±0.0001	11.67±1.28**	104.74±8.60
Group 6 (Cd + Ag)	0.47±0.01c	5.11±0.08a	12.5±0.77c	95.25± 6.46a
Group 7 (Cd+*Hl*+Ag)	0.48±0.02a	4.81±0.08c	11.75±0.55c	95.1±11.4a

Table S4. Kidney oxidative stress markers in the seven rat groups. Group 1 (Control): not treated/not exposed. Group 2 (Cd): addition of $CdCl_2$ (50 mg/kg body weight/day) in drinking water for 35 days. Group 3 (*Hl*): *H. lippii* (100 mg/kg body weight/day, by gavage for 35 days). Group 4 (Cd + *Hl*): $CdCl_2$ exposure (like in Group 2) followed by *H. lippii* (100 mg/kg body weight/day by gavage) for 15 days. Group 5 (Ag): Ag NPs (100 µg/kg body weight/day, intraperitoneal injection) for 35 days. Group 6 (Cd + Ag): $CdCl_2$ exposure (like in Group 2) followed by Ag NPs (0.1 mg/kg body weight/day by intraperitoneal injection) for 15 days. Group 7 (Cd+Hl+Ag): $CdCl_2$ exposure (like in Group II) followed by *H. lippii* (100 mg/kg body weight/day by gavage) and Ag NPs (0.1 mg/kg body weight/day by intraperitoneal injection) for 15 days. ***p < 0.001 vs Group 1; a p < 0.05, b p < 0.01, C p < 0.001 vs Group 2 (n = 5 rats/group).

Rat groups	MDA (nmol/mg protein)	SOD (U/mg protein)	GSH (nmol/mg tissue)	Catalase (U/g tissue)
Group 1 (Control)	0.403±0.021	0.26±0.009	0.00023±0.001	0.04373±0.008
Group 2 (Cd)	0.9061±0.0592***	0.239±0.00001	0.00022±0.000001	0.01931±0.0072***
Group 3 (*Hl*)	0.418±0.0647	0.242±0.006	0.00025±0.0001	0.044±0.0020
Group 4 (Cd+*Hl*)	0.7469±0.0545a	0.269±0.0109a	0.00025±0.00001c	0.04236±0.0061b
Group 5 (Ag)	0.577±0.0389	0.2819±0.0142	0.00025±0.00001	0.0397±0.0009
Group 6 (Cd + Ag)	0.4919±0.0594c	0.272±0.00001c	0.00024±0.00001a	0.02835±0.00202c
Group 7 (Cd+*Hl*+Ag)	0.5274±0.0382c	0.257±0.0032c	0.00024±0.00001b	0.0458±0.0108b

Table S5. Semi-quantitative results of the histological analysis of the kidney architecture in the different rat groups: Group 1 (Control): not treated/not exposed. Group 2 (Cd): addition of $CdCl_2$ (50 mg/kg body weight/day) in drinking water for 35 days. Group 3 (*Hl*): *H. lippii* (100 mg/kg body weight/day, by gavage for 35 days). Group 4 (Cd + *Hl*): $CdCl_2$ exposure (like in Group 2) followed by *H. lippii* (100 mg/kg body weight/day by gavage) for 15 days. Group 5 (Ag): Ag NPs (100 µg/kg body weight/day, intraperitoneal injection) for 35 days. Group 6 (Cd + Ag): $CdCl_2$ exposure (like in Group 2) followed by Ag NPs (0.1 mg/kg body weight/day by intraperitoneal injection) for 15 days. Group 7 (Cd+Hl+Ag): $CdCl_2$ exposure (like in Group II) followed by *H. lippii* (100 mg/kg body weight/day by gavage) and Ag NPs (0.1 mg/kg body weight/day by intraperitoneal injection) for 15 days (n = 5 rats/group).

Rat groups	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7
Parameters	Control	Cd	*Hl*	Cd + *Hl*	Ag	Cd +Ag	Cd +Ag+*Hl*
Inflammatory infiltration	-	+++	-	-	-	-	-
Tubular dilation	-	+++	-	+	-	-	-
Destroyed glomeruli	-	+++	-	-	-	-	-