Supplementary Material

A synthetic receptor as a specific antidote for paraquat poisoning

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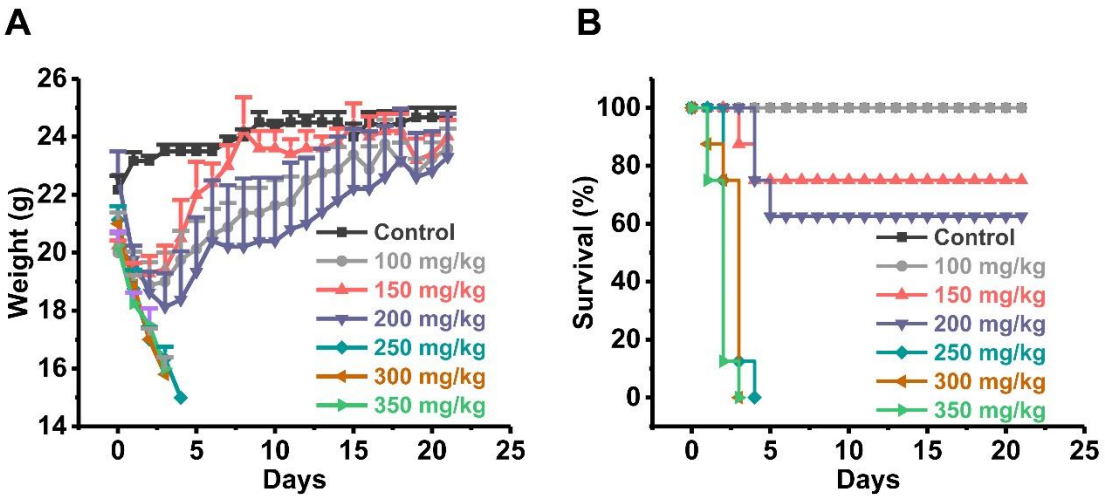

Figure S1. Toxicity examination of PQ ingestion. Weight changes (A) and survival curves (B) of mice orally administered with PQ at various doses. Data are presented as means + SEM, n = 8.

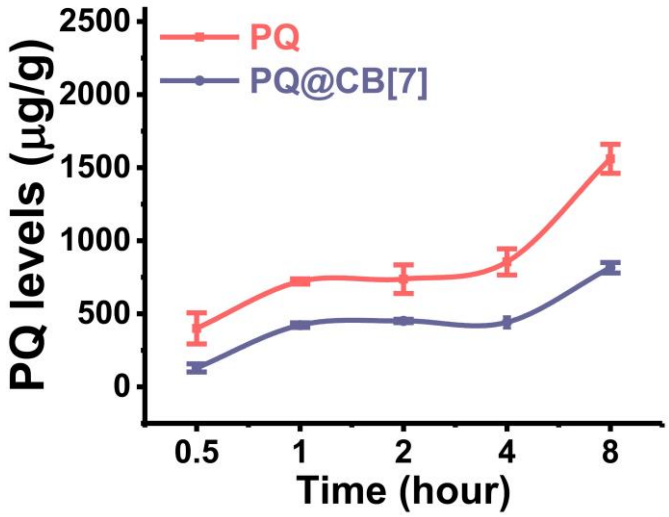

Figure S2. Cellular uptake of PQ and PQ@CB[7] in Caco-2 cells. Caco-2 cells were incubated with PQ (0.5 mM) or PQ@CB[7] (0.5 and 2 mM) for various times (n = 3). Data are presented as means ± SEM.

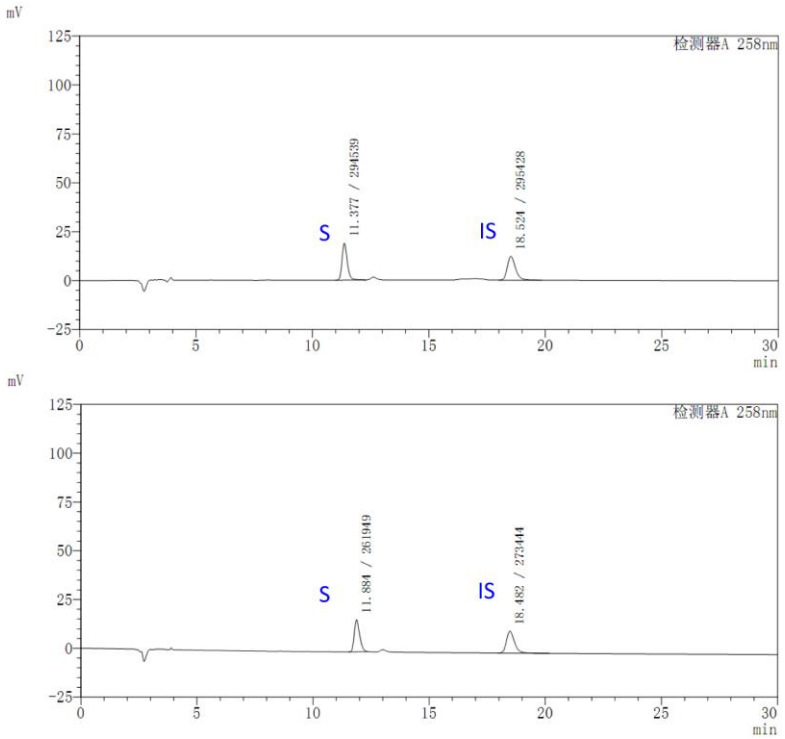

Figure S3. Chromatograms of (PQ&EQ) and (PQ&EQ)@CB[7] solutions. The chromatogram of the aqueous solution made of 1 μg/mL PQ (sample, S) and 1.5 μg/mL EQ (internal standard, IS) in the absence (PQ&EQ, the top figure) or presence ((PQ&EQ)@CB[7], the bottom figure) of 10 μg/mL CB[7].

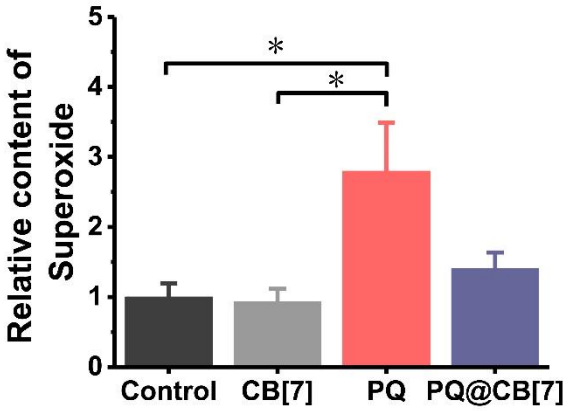

Figure S4. Relative content of superoxide in jejunum. Samples were collected and determined at 8 h after mice had ingested PQ or PQ@CB[7] (molar ratio of PQ/CB[7] = 1:2, CB[7] = 2.71 g/kg) at the PQ dose of 300 mg/kg. Data are presented as means ± SEM, n = 6, and *P < 0.05, **P < 0.01, ***P < 0.001.

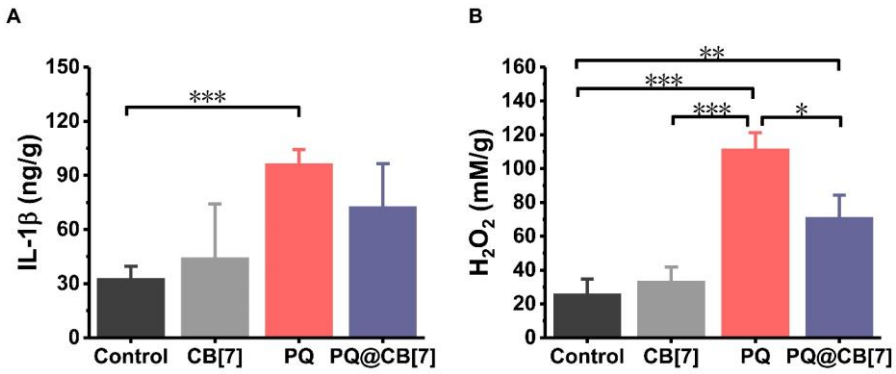

Figure S5. IL-1β and H_2O_2 levels in ileum. Samples were collected and determined at 8 h after mice had ingested saline (control group), CB[7] (2.71 g/kg), PQ or PQ@CB[7] (molar ratio of PQ/CB[7] = 1:2, CB[7] = 2.71 g/kg) at the PQ dose of 300 mg/kg. Data are presented as means ± SEM, n = 6, and $^{*}P < 0.05$, $^{**}P < 0.01$, $^{***}P < 0.001$.

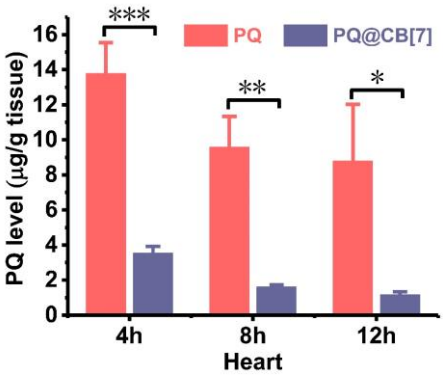

Figure S6. CB[7] reduces the distribution of PQ in the heart. PQ accumulation in the heart were determined at 4, 8 and 12h after mice had ingested PQ or PQ@CB[7] (molar ratio of PQ/CB[7] = 1:2) at the PQ dose of 300 mg/kg. Data are presented as means ± SEM, n = 6, and *P < 0.05, **P < 0.01, ***P < 0.001.

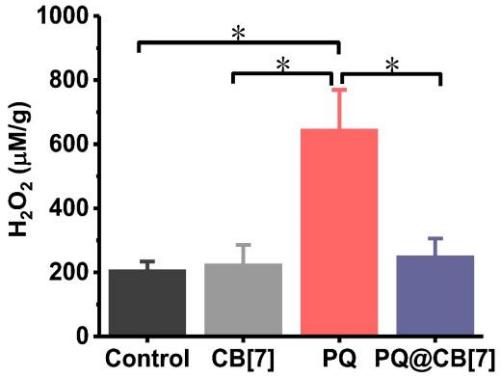

Figure S7. H_2O_2 level in the lung. H_2O_2 levels in the lung were determined at 8 h after mice had ingested saline (control group), CB[7] (2.71 g/kg), PQ or PQ@CB[7] (molar ratio of PQ/CB[7] = 1:2, CB[7] = 2.71 g/kg) at the PQ dose of 300 mg/kg. Data are presented as means ± SEM, n = 6, and *P < 0.05.

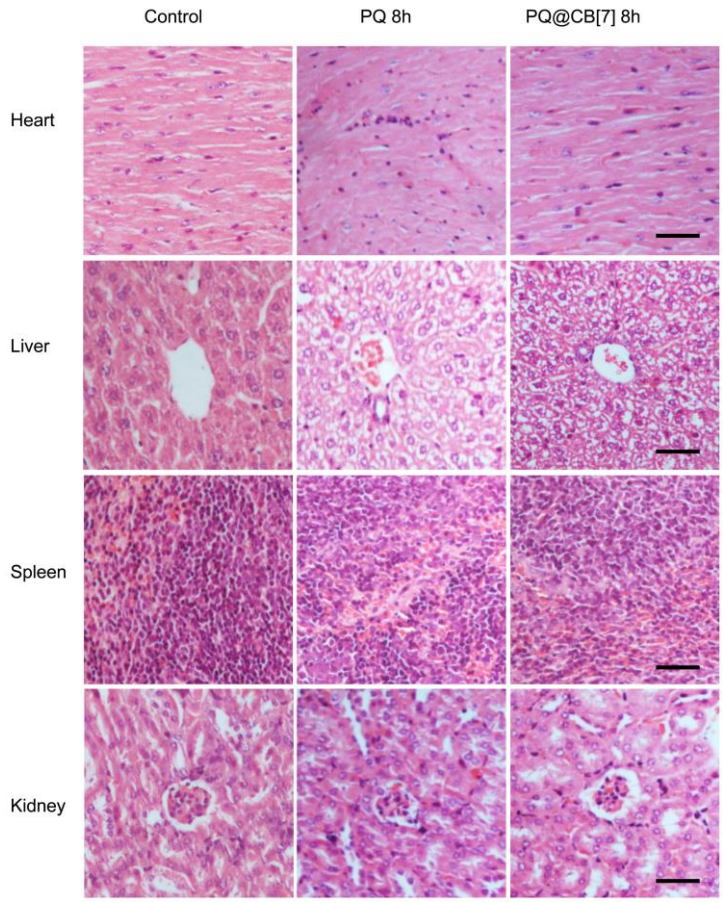

Figure S8. H&E stained sections of major organs from mice at 8h after administration of PQ and PQ@CB[7]. Samples were collected from mice sacrificed 8h after oral administration with PQ or PQ@CB[7] (molar ratio of PQ/CB[7] = 1:2) at the PQ dose of 300 mg/kg. Scale bar = 100 μm.

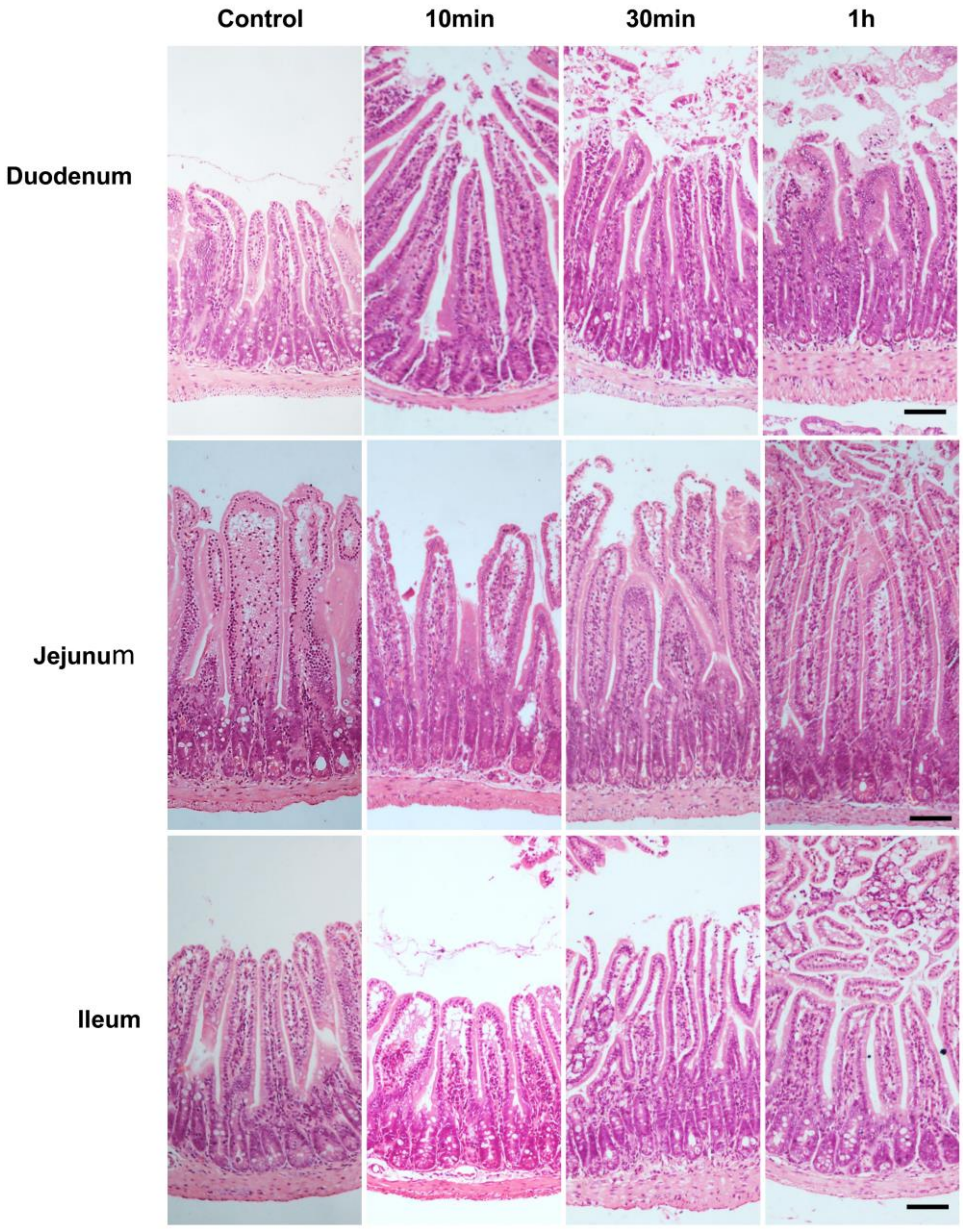

Figure S9. H&E stained sections of intestine tissues from surviving poisoned mice treated with CB[7]. Mice were treated with CB[7] (molar ratio of CB[7]/PQ = 2:1, CB[7]= 2.71 g/kg) at 10min, 30min and 1h after ingestion of PQ at the PQ dose of 300 mg/kg. Scale bar = 200 μm.

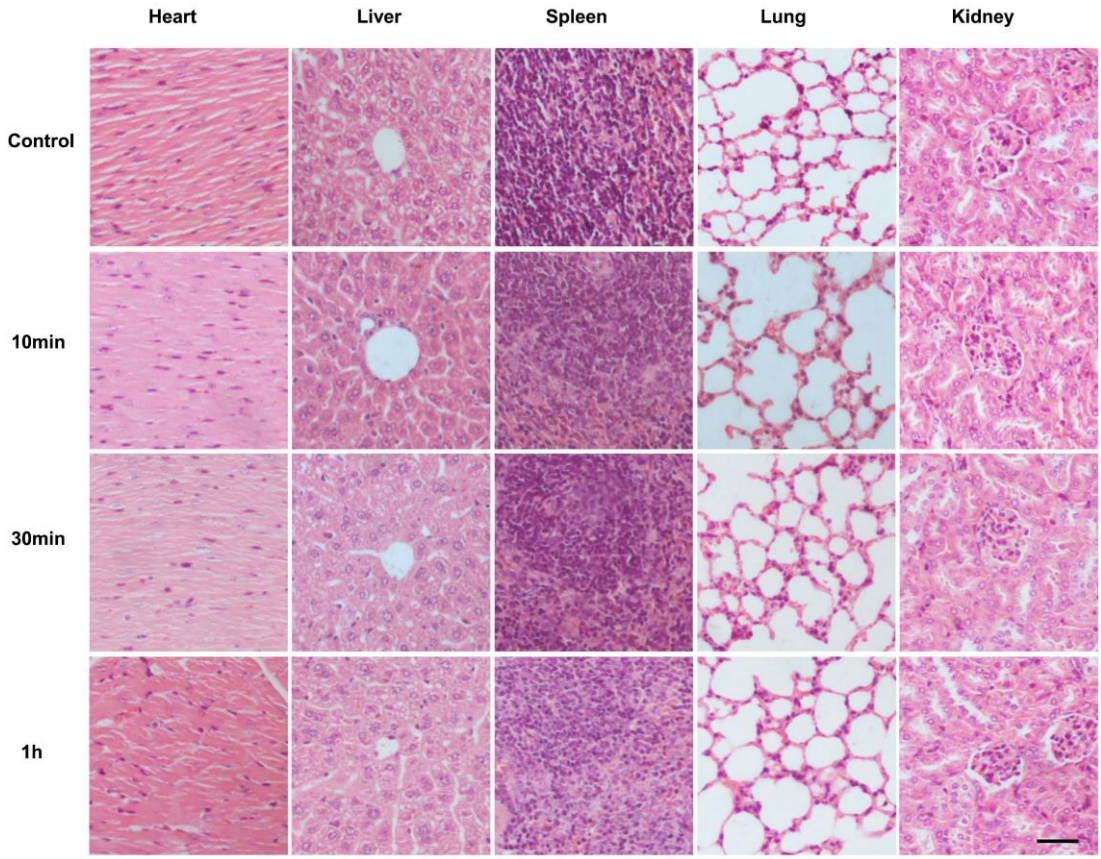

Figure S10. H&E stained sections of major organs from surviving poisoned mice treated with CB[7]. Mice were treated with CB[7] (molar ratio of CB[7]/PQ = 2:1, CB[7]= 2.71 g/kg) at 10 min, 30 min and 1h after ingestion of PQ at the PQ dose of 300 mg/kg. Scale bar = 100 μm.