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Supporting Information

Carbon dots up-regulate heme oxygenase-1 expression towards the acute lung injury therapy

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1. Experiments section

Synthesis of CDs

50 g L-ascorbic acid powder was dissolved in 1 L ultrapure water and then the two electrodes (graphite rod, 99.99%, Alfa Aesar Co. Ltd.) were applied with 0.1 A direct current power supply. After 3 weeks, the solution was filtered with slow-speed quantitative filter paper and then the product was dialyzed in a 500 Da dialysis bag against deionized water to remove excess L-ascorbic.

2. Additional figures

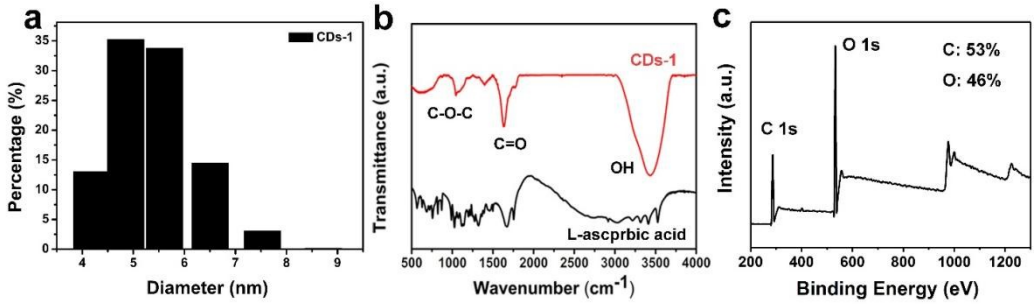

Figure S1. (a) Diameter distributions of CDs-1. (b) FTIR spectra of CDs-1 and L-ascorbic acid (red and black traces, respectively). (c) XPS full scan spectrum of CDs-1.

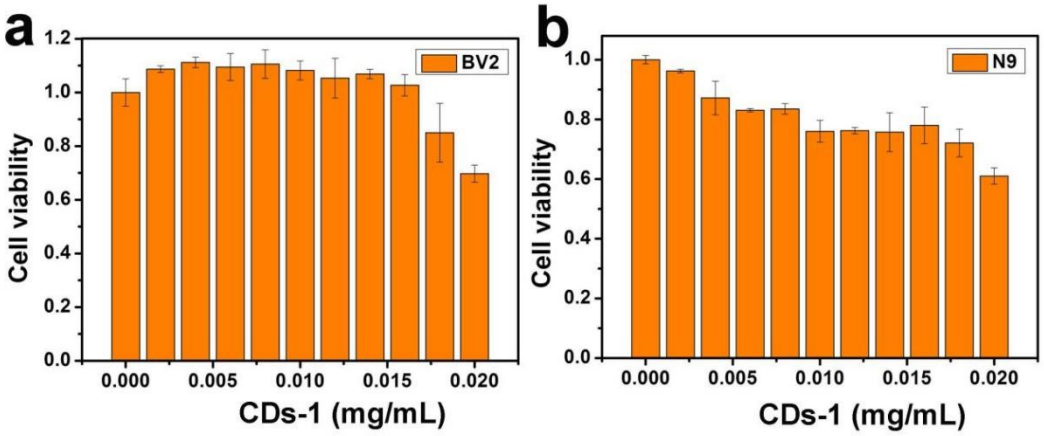

Figure S2. Viability of BV2 (a) and N9 (b) cells after 24 h treatment with different concentrations of CDs-1 as calculated from CCK-8 assay.

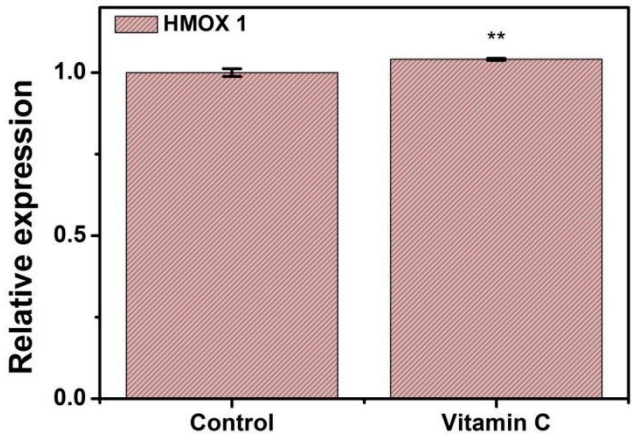

Figure S3. Effect of L-ascorbic acid (VC) on HMOX 1 gene expression in RAW264.7 cells. *$p < 0.05$, **$p < 0.01$ and ***$p < 0.001$, The mean and standard deviation are represented by column and error bar.

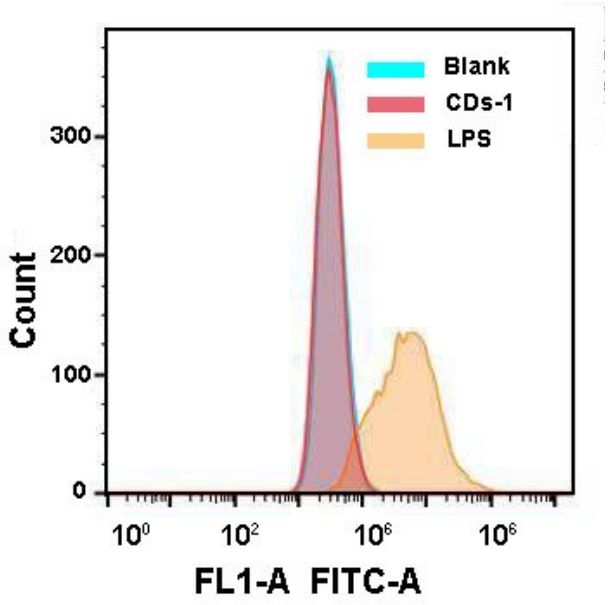

Figure S4. The reactive oxygen species (ROS) level of RAW264.7 cells treated with CDs-1 and LPS respectively was tested by flow cytometry. Untreated RAW264.7 was set as blank.

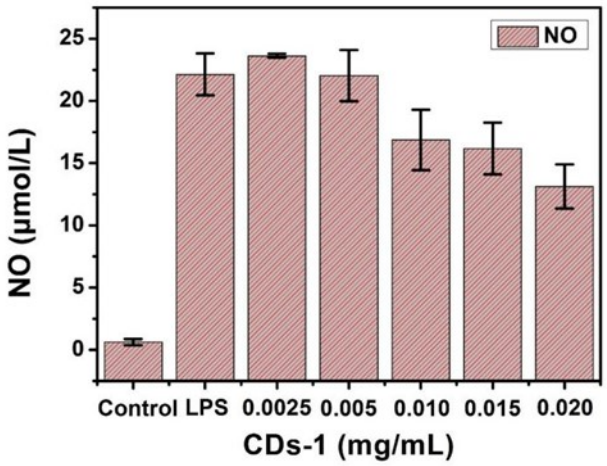

Figure S5. Level of NO in RAW264.7 treated with different concentrations of CDs-1.

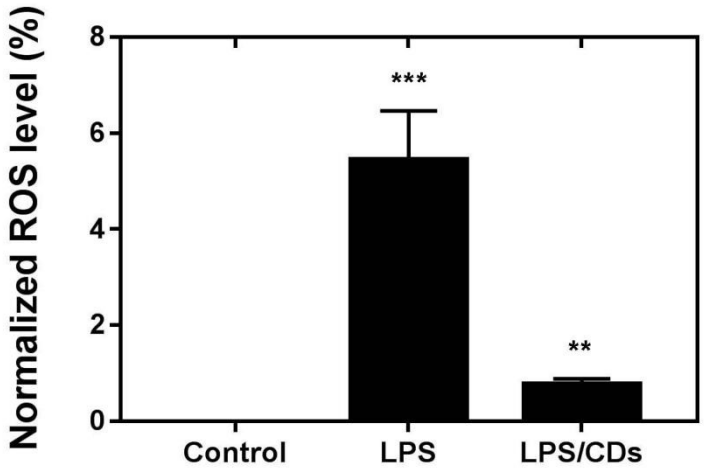

Figure S6. Normalized cellular ROS level in RAW264.7 cells in Control group, LPS group and CDs-1-treated-group respectively. *p < 0.05, **p < 0.01 and ***p < 0.001, The mean and standard deviation are represented by column and error bar.

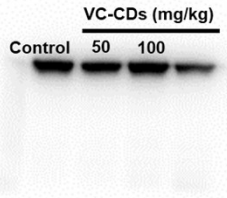

Figure S7. The proteins expression of GAPDH in lung tissue of mice treated with CDS-1 for 7 days, the concentrations of CDs-1 were 0, 50 and 100 mg/kg, respectively.

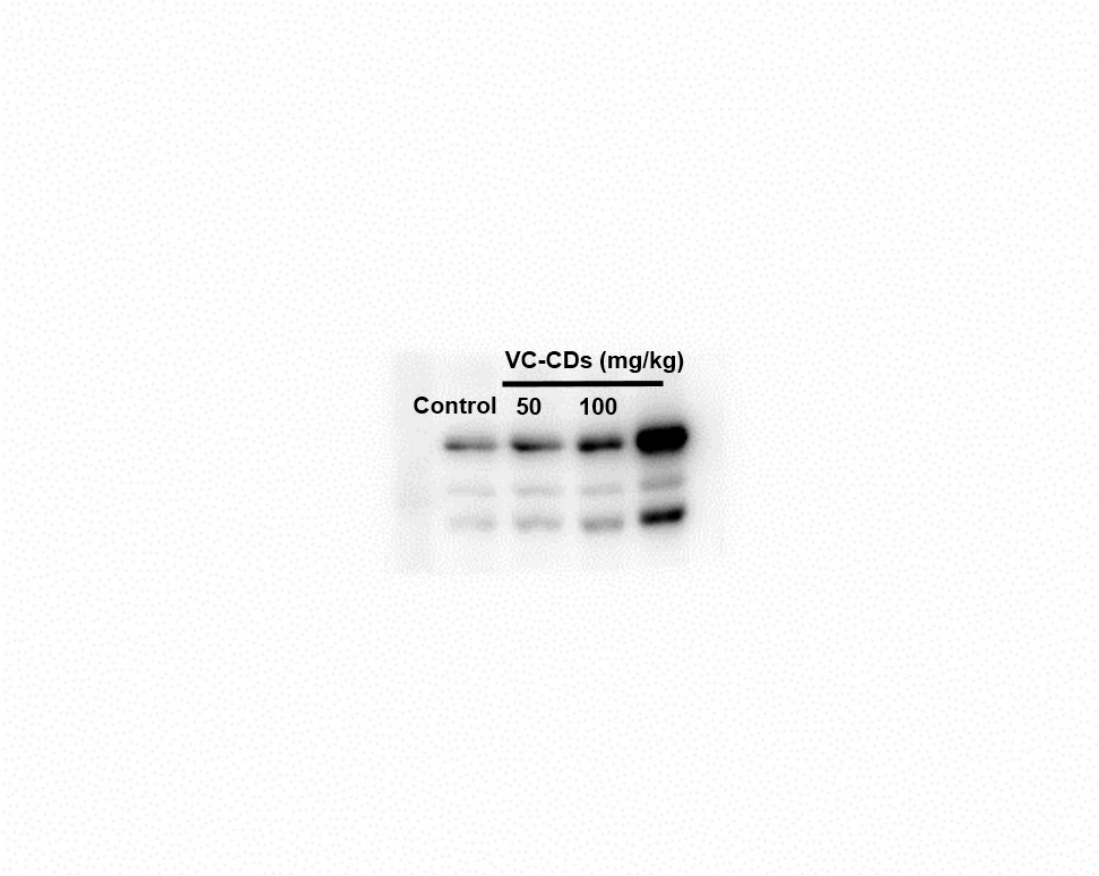

Figure S8. The proteins expression of HMOX 1 in lung tissue of mice treated with CDS-1 for 7 days, the concentrations of CDs-1 were 0, 50 and 100 mg/kg, respectively.

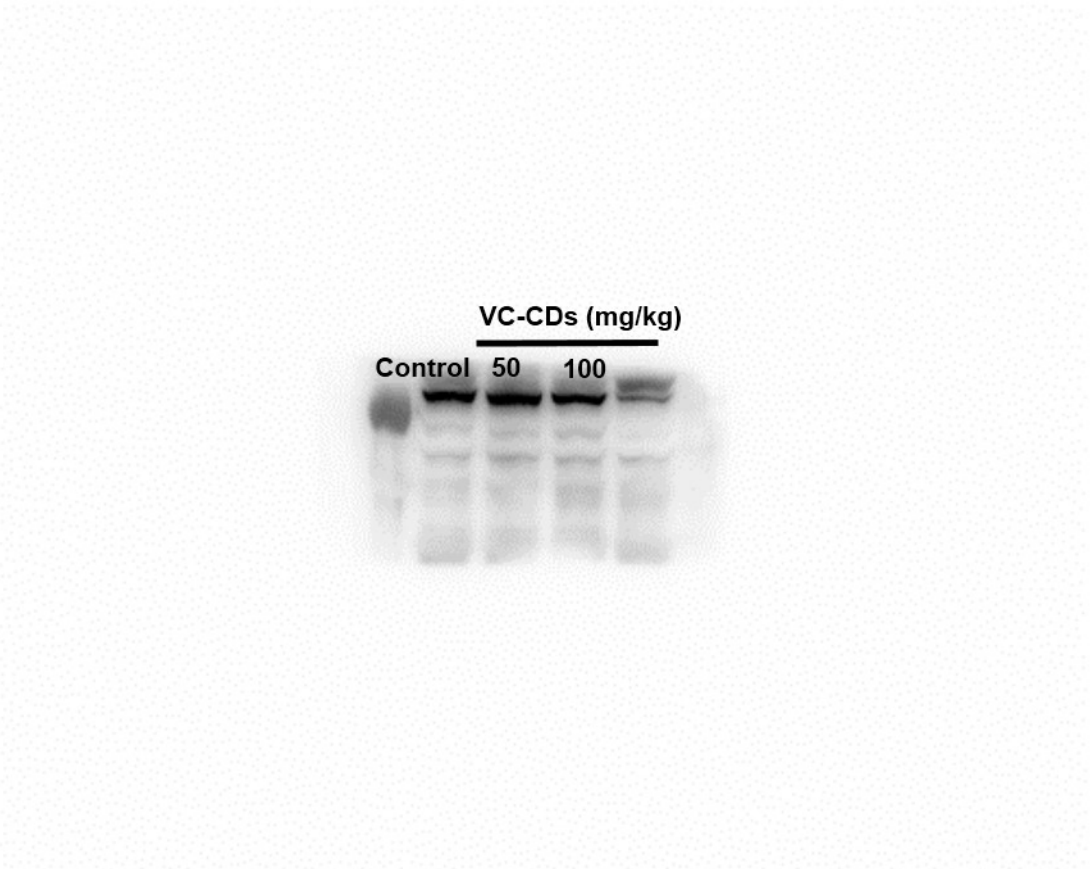

Figure S9. The proteins expression of NRF 2 in lung tissue of mice treated with CDS-1 for 7 days, the concentrations of CDs-1 were 0, 50 and 100 mg/kg, respectively.

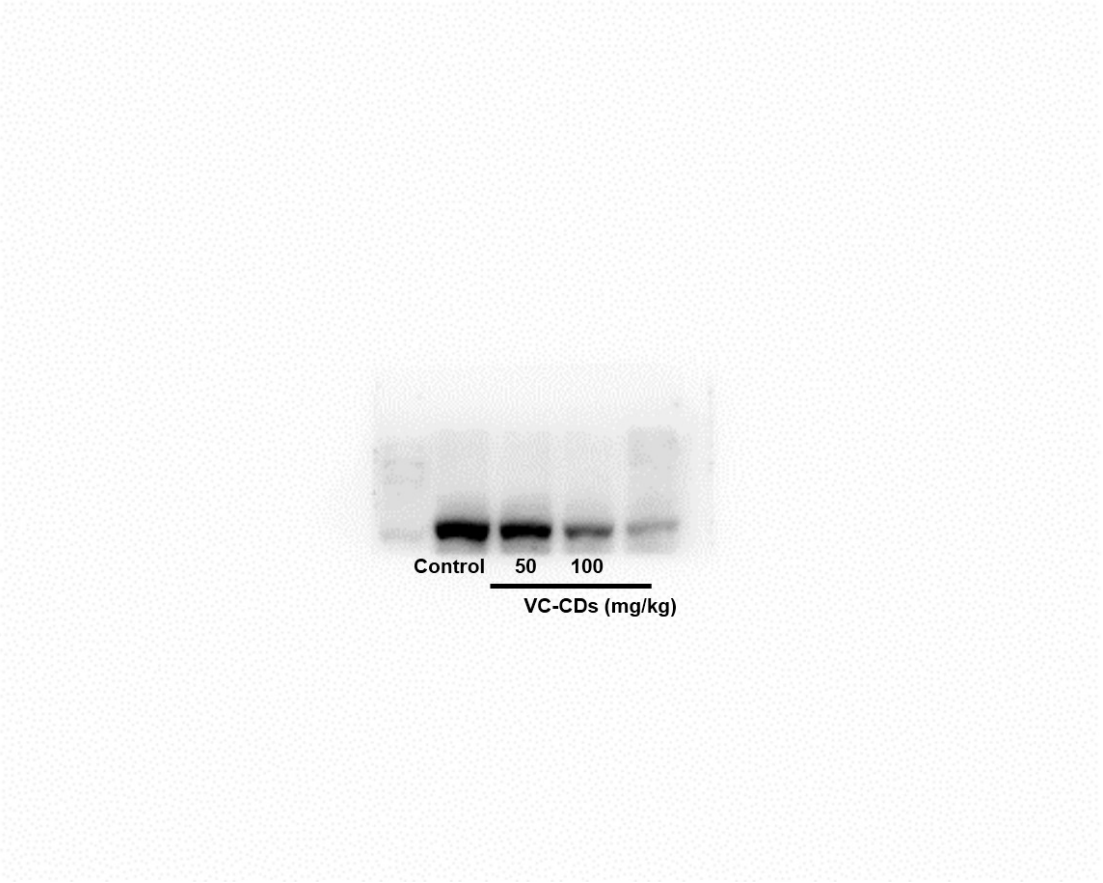

Figure S10. The proteins expression of BACH 1 in lung tissue of mice treated with CDS-1 for 7 days, the concentrations of CDs-1 were 0, 50 and 100 mg/kg, respectively.