

## Supporting Information

# **Albumin-Manganese Dioxide Nanocomposite: A Potent Inhibitor and ROS Scavenger against Alzheimer's $\beta$ - Amyloid Fibrillogenesis and Neuroinflammation**

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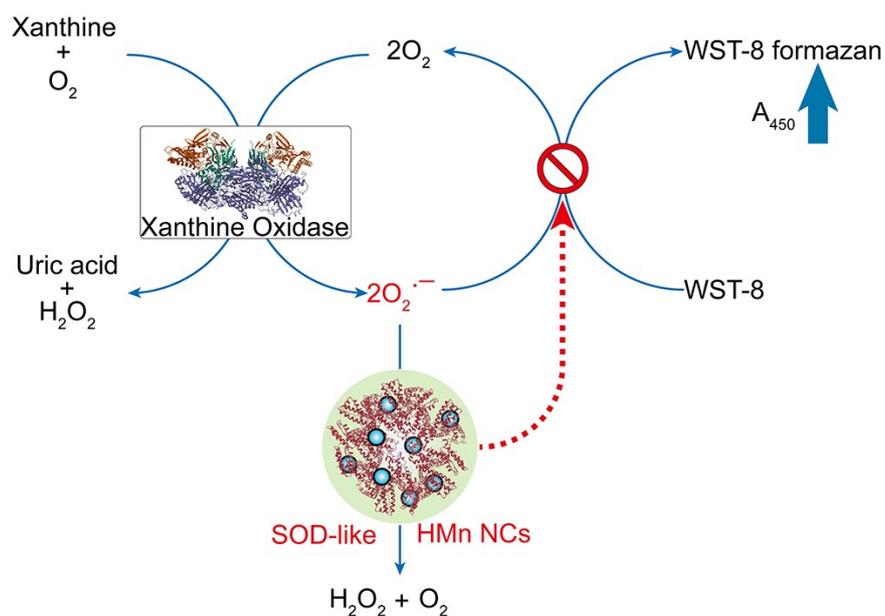
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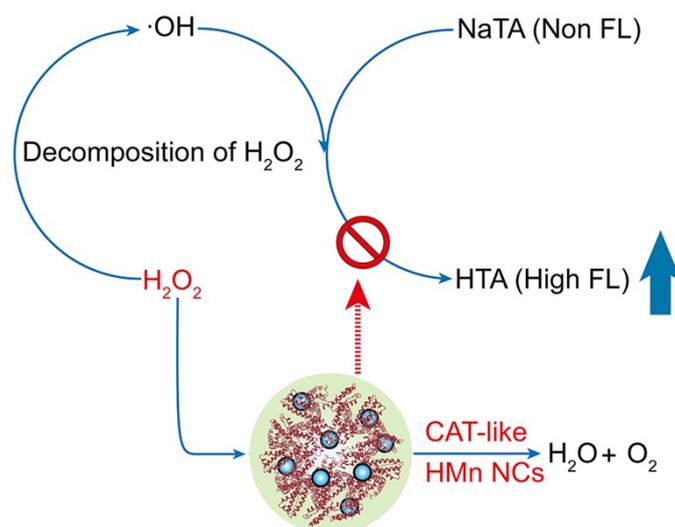
**Table S1** Effect of mass ratio (HSA : MnCl<sub>2</sub>) and reaction time on the capability of HMn NCs to scavenge O<sub>2</sub><sup>-</sup>

No.	Ratio <sub>[HSA : MnCl<sub>2</sub>]</sub> <sup>a</sup>	Time (h)	O <sub>2</sub> <sup>-</sup> Scavenging percentage (%) <sup>b</sup>	Solution stability
1	10:1	2	31.8±3.2	Clear
2	10:1	4	32.5±5.3	Clear
3	10:1	6	27.3±1.6	Clear
4	10:2	2	80.1±0.8	Clear
5	10:3	2	-	Precipitated
6	10:4	2	-	Precipitated
7	10:5	2	-	Precipitated
8	10:10	2	-	Precipitated

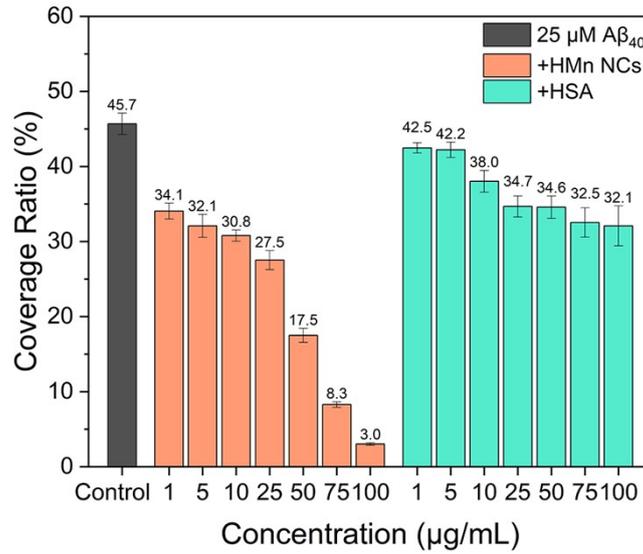
<sup>a</sup>) 10:1 indicates that the reaction solution contains 10 mg HSA and 1.26 mg MnCl<sub>2</sub>. Similarly, 10: 2 represents 10 mg HSA and 2.52 mg MnCl<sub>2</sub> in solution; <sup>b</sup>) The scavenging percentage of O<sub>2</sub><sup>-</sup> was determined by the total SOD activity assay kit with WST-8, in which the final concentration of HMn NCs was 100 µg/mL.



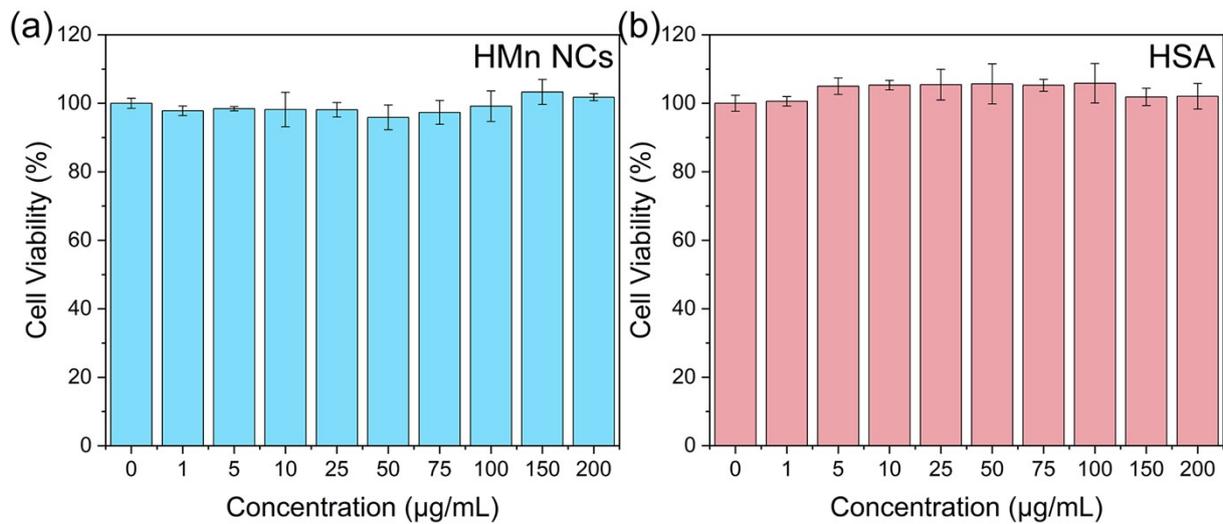
**Figure S1** The schematic diagram for the SOD-like activity of HMn NCs.



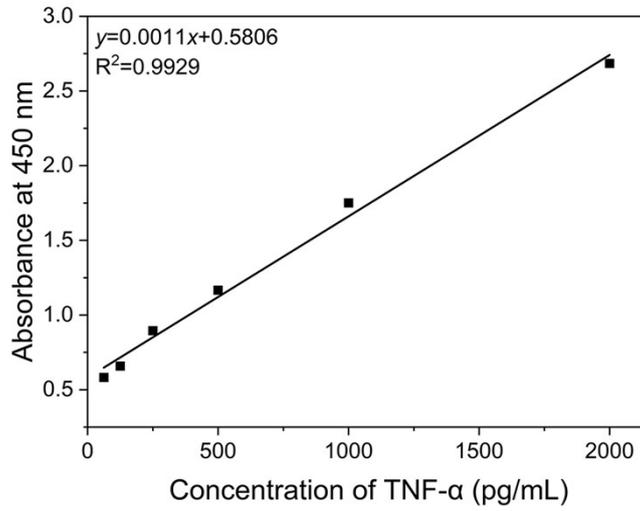
**Figure S2** The schematic diagram for the CAT-like activity of HMn NCs.



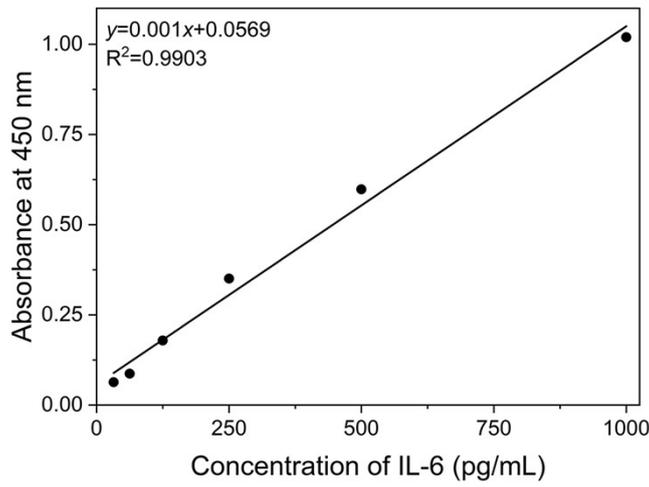
**Figure S3** Analyses of the coverage of Aβ<sub>40</sub> fibrils. The coverage ratio of Aβ<sub>40</sub> fibrils was performed by employing ImageJ software at different concentrations of HMn NCs or HSA.



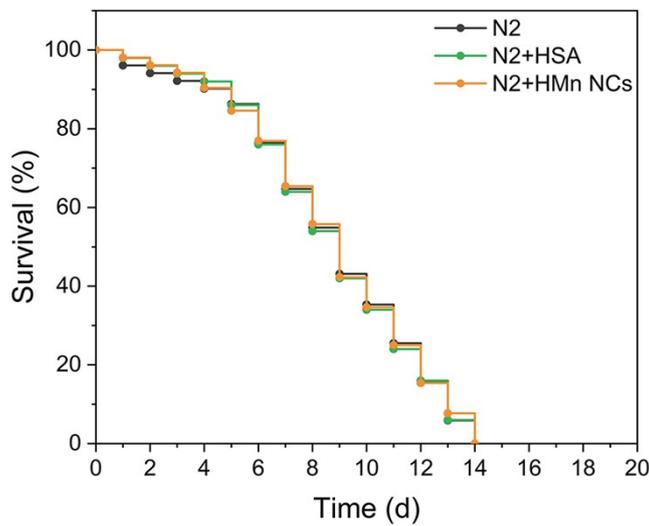
**Figure S4** The a) HMn NCs or b) HSA self-induced cytotoxicity toward SH-SY5Y cells. The assay was performed in 100 mM PBS buffer (containing 10 mM NaCl, pH 7.4). The control groups represent cells incubated with buffer. Error bars in the graph represent the mean ± SD ( $n = 6$ ).



**Figure S5** Standard curve of TNF- $\alpha$ .



**Figure S6** Standard curve of IL-6.



**Figure S7** Survival curves of HMn NCs or HSA-treated N2 worms.