

Supporting Information

A Quantitative and Dynamic Study of Exocytosis of Titanium Dioxide Nanoparticles from Neural Stem Cells

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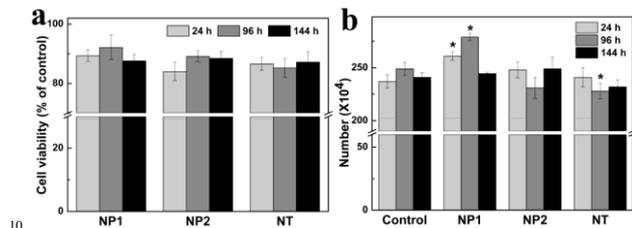


Fig.S1 The results of the cytotoxicity tests of NSCs exposed to TiO₂ NPs at three time points. The cytotoxicity of NSCs cultured in fresh medium after pre-incubating cells with TiO₂ NPs for 48 h at concentration of 50 mg L⁻¹. (a) Viability of NSCs detected by CCK-8 assay. (b) Cell proliferation by counting the cell numbers under optical microscope. *p<0.05 when compared with control.

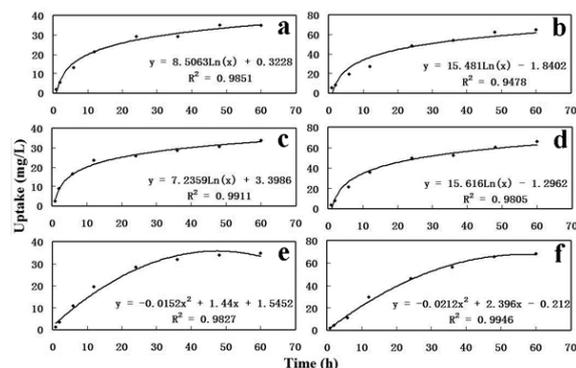


Fig. S2 Fitting curves of endocytosis of TiO₂ NPs. (a), (c) and (e) uptake at concentration of 50 mg L⁻¹. (b), (d) and (f) uptake at concentration of 100 mg L⁻¹. (a) and (b) NP1, (c) and (d) NP2, (e) and (f) NT at different time points of incubation.

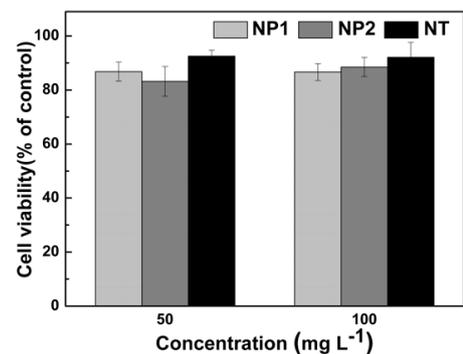


Fig.S3 The viability of NSCs detected by CCK-8 assay. NSCs were exposed to TiO₂ NPs for 48 h at concentrations of 50 mg L⁻¹ and 100 mg L⁻¹.

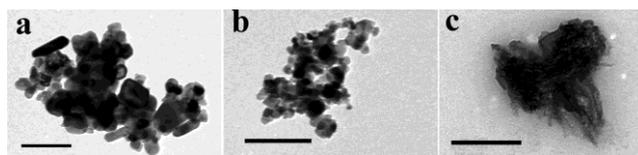


Fig. S4 TEM images of TiO₂ NPs. (a) NP1, (b) NP2 and (c) NT pretreated with 30 culture medium for 24 h (Scale bars: 200 nm)

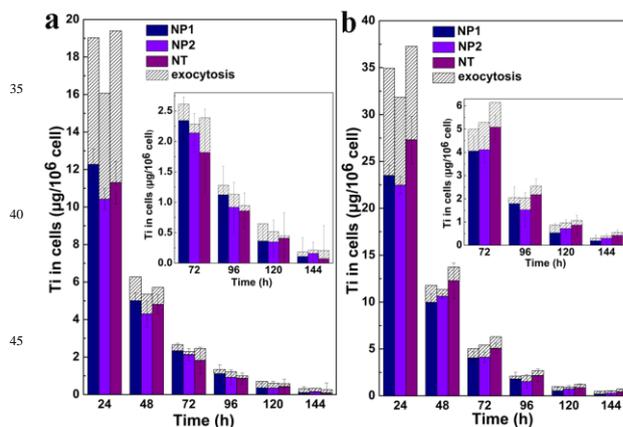


Fig. S5 The Ti content (µg per million cells) at different time points after termination of endocytosis of TiO₂ NPs from NSCs. (a) Cells were incubated with 50 mg L⁻¹ for 48 h; (b) cells were incubated with 100 mg L⁻¹ for 48 h. The solid color pillar indicates the measured Ti content. The whole pillar (solid plus hatched) indicates the theoretical Ti content, which equals to the one half of the measured Ti content (solid color pillar) in the mother cells at the previous time point. The hatched pillar indicates Ti content exocytosed during 24 h.

Table S1 Physicochemical properties of TiO₂ NPs.

| Sample | NP1 | NP2 | NT |
|---------------------|----------------|----------------|-----------|
| Crystal phase | anatase/rutile | anatase/rutile | amorphous |
| Purity [%] | 98.6 | 99.8 | 99.3 |
| Zeta potential [mV] | -5.5 | -26.5 | 7.2 |

65

70