Electronic Supplementary Material (ESI) for Inorganic Chemistry Frontiers.

Supplementary information for

Chitosan-coated cerium oxide nanocubes accelerate cutaneous wound healing by curtailing persistent inflammation

Xue Huang,[a,#] Lin-Dong Li,[b,#] Guang-Ming Lyu,[b] Bai-Yu Shen,[a] Yan-Fei Han,[a] Jing-Lin Shi,[c] Jia-Li Teng,[c] Li Feng,[c] Shao-Yan Si,[d] Ji-Hua Wu,[e] Yan-Jun Liu,*[ac] Ling-Dong Sun*[b] and Chun-Hua Yan*[b]

[a] *Department of Endocrinology, 306 Hospital of PLA, Teaching Hospital of Peking University, Beijing 100101, China. Email: yanjunl@yeah.net; Fax: +86-10-64860685; Tel: +86-10-66356374*

[b] *Beijing National Laboratory for Molecular Sciences, State Key Laboratory of Rare Earth Materials Chemistry and Applications, PKU-HKU Joint Laboratory in Rare Earth Materials and Bioinorganic Chemistry, College of Chemistry and Molecular Engineering, Peking University, Beijing 100871, China. Email: sun@pku.edu.cn, yan@pku.edu.cn; Fax: +86-10-62754179; Tel: +86-10-62754179*

[c] *Department of Endocrinology, 306 Hospital of PLA, Beijing 100101, China*

[d] *Department of Special Medical Research, 306 Hospital of PLA, Beijing 100101, China*

[e] *Department of Pathology, 306 Hospital of PLA, Beijing 100101, China*

[#] *These authors contributed equally to this work.*

Experimental Section

Cell culture. Rat insulinoma cell line INS-1 was purchased from the National Platform of Experimental Cell Resources for Sci-Tech (China). The cells were cultured in RPMI-1640 medium supplemented with 10% fetal bovine serum, 100 U/mL penicillin, 100 μg/mL streptomycin, 1 mM sodium pyruvate and 50 μM β-mercaptoethanol under 37 °C, saturated humidity and 5% CO_2 (v/v). The cells were passaged every four to five days and the medium was changed every two days.

Cytotoxicity assay. Cell Counting Kit-8 (CCK-8, Dojindo, Kumamoto, Japan) was used to evaluate cell viability. Tetrazolium salt in the kit was reduced by dehydrogenases in cell mitochondria to a highly soluble yellow formazan, whose characteristic absorption at 450 nm can be employed as an indicator of cell viability. The cells were first plated in a 96-well plate with a density of 1.5×10^4 per well in 120 μL medium and pre-incubated for 24 h. 6 μL of CCNs of different concentrations were subsequently added, and the cells were further incubated for 48 h. Finally, the medium was replaced with fresh medium containing CCK-8 and further incubated for 2 h, after which the absorbance of each well at 450 nm and the reference wavelength of 650 nm was collected with a Synergy 4 multi-mode microplate reader (BioTek, USA).

Table S1. Description of primers used in RT-PCR

Gene	Primer sequence	Product size	Annealing temp.	Accession number
GAPDH	F:5'-CTTCAACAGCAACTCCCATTC-3' R:5'-GTAGCCATATTCATTGTCATACCAG-3'	106	60 °C	NC_005103
TNF-α	F:5'-ATCCGAGATGTGGAACTGGC-3' R:5'-CGATCACCCCGAAGTTCAGT-3'	153	60 °C	NM012675.3
IL-10	F:5'-TAAAAGCAAGGCAGTGGAGC-3' R:5'-GTCACGTAGGCTTCTATGCAG-3'	161	60 °C	NM012854.2

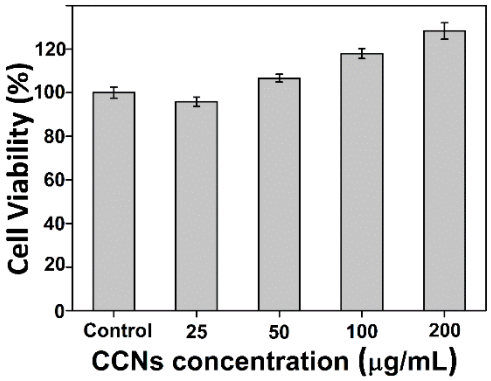

Figure S1. Cell viability of INS-1 cells incubated with CCNs of different concentrations for 48 h. Data are expressed as means ± SD, $n = 6$.

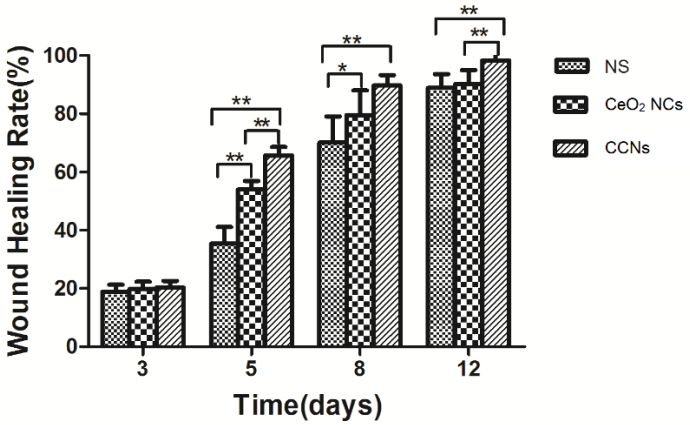

Figure S2. Wound healing rate (%) of NS, as-prepared CeO_2 NCs and CCN-treated groups on day 2, 5, 8 and 12 post-wounding. Data are expressed as means ± SD. *p<0.05, **p<0.01 vs. other group(s) on the same day.

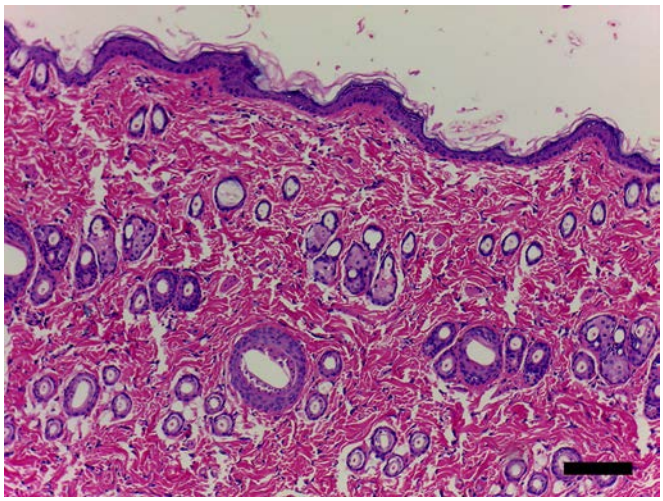

Figure S3. Representative image of H&E stained histopathological sections of normal rat skin (scale bar: 400 μm).