Supporting Information

Copper-based carbon dots modified hydrogel with osteoimmunomodulatory and osteogenesis for bone regeneration

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Table S1. QY of the CuCDs dispersed in distilled water.

Samples	Integrated emission intensity (I)	Abs. (A)	Refractive index of solvent (n)	QY(φ)
Quinine sulfate	1261278901	0.0831	1.334	0.54
CuCDs	25185227	0.0399	1.334	0.42

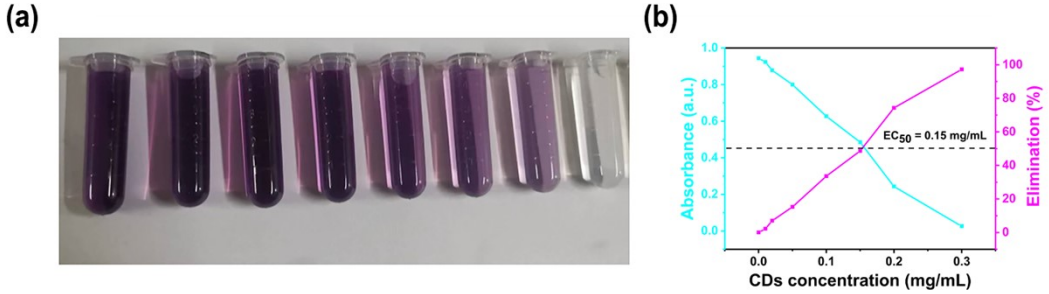

Fig. S1 •OH Scavenging Activity of CuCDs. (a) Formation of colored compounds during •OH elimination, CuCDs concentrations from left to right were 0,10,20,50,100,150,200 and 300μg/mL, respectively; (b) elimination efficiency of CuCDs toward •OH.

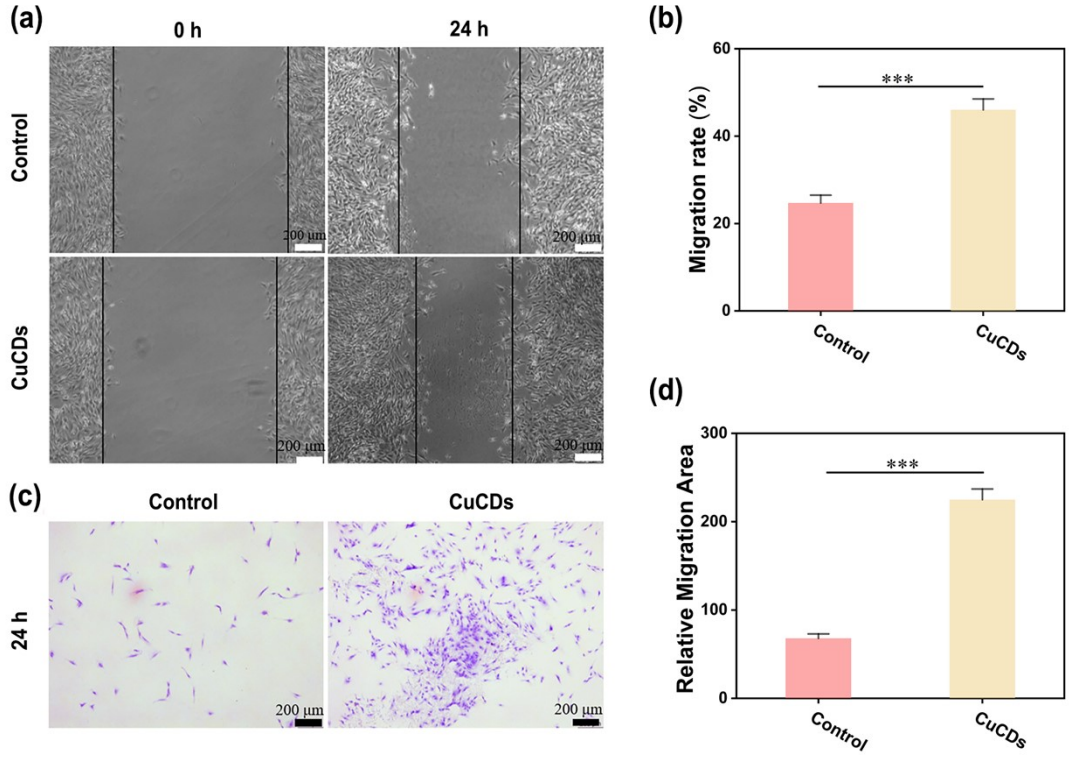

Fig. S2 Cell motility of BMSCs cultured with CuCDs. (a) Scratch assay; (b) Corresponding quantitative data of the scratched area analyzed by ImageJ software; (c) Transwell assay; (d) Corresponding quantitative data of migrating area analyzed by ImageJ software. The results were expressed as mean ± standard deviation (n = 5, *p < 0.05, **p < 0.01 and ***p < 0.001) and the statistical significance was assessed by student's t-test.

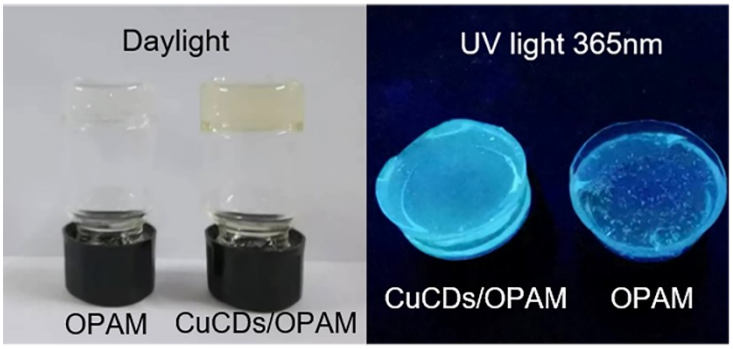

Fig. S3 The digital photo of hydrogel samples taken under sunlight (left) and UV light (right).

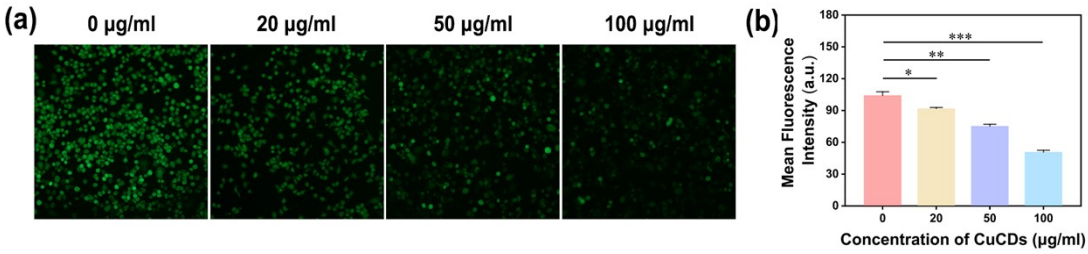

Fig. S4 Scavenging of intracellular ROS by CuCDs. (a) CuCDs inhibited the production of excess ROS by RAW264.7 cells (fluorescent image). (b) Mean fluorescence intensity of RAW264.7 cells (stained with DCFH-DA) with different treatments analyzed by ImageJ software. The results were expressed as mean ± standard deviation (n = 5, *p < 0.05, **p < 0.01 and ***p < 0.001) and the statistical significance was assessed by one-way ANOVA.

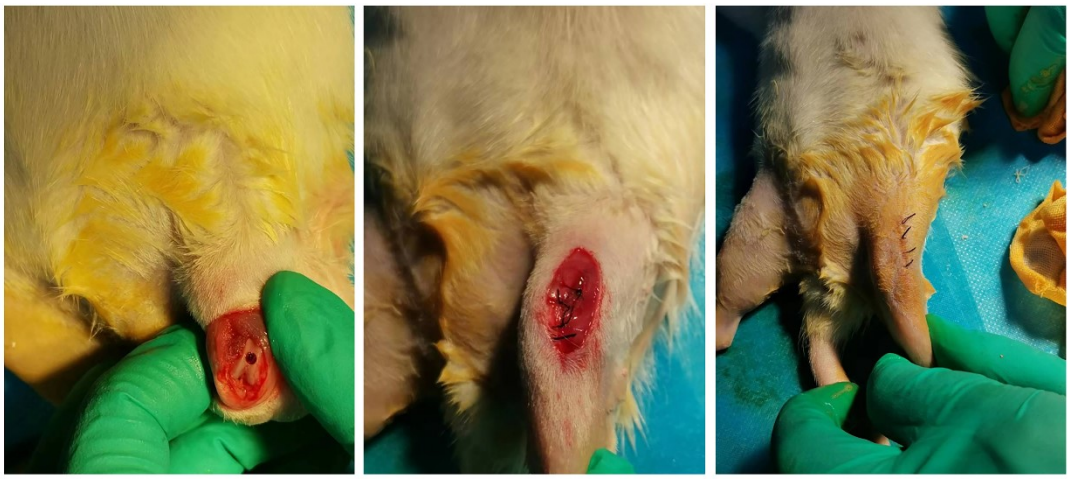

Fig. S5 The protocol of animal experiments.

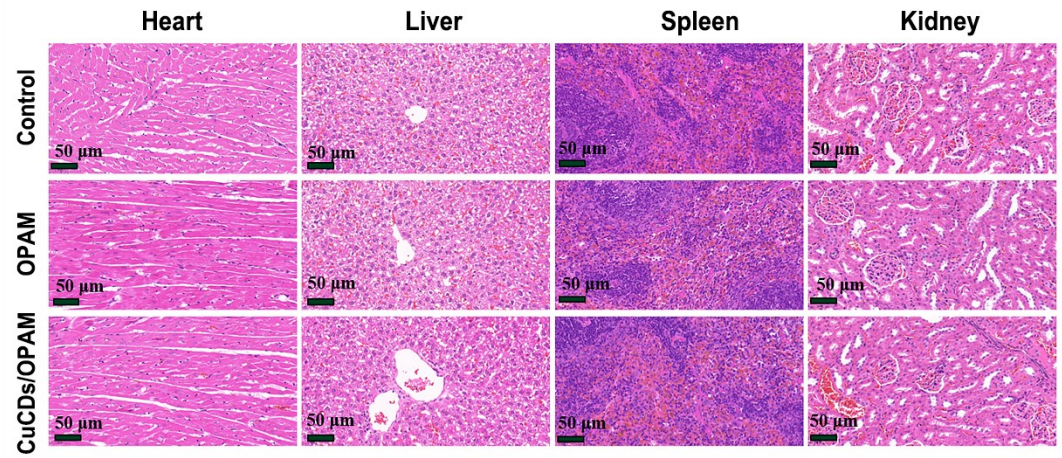

Fig. S6 Evaluation of biocompatibility of hydrogel after implantation. H&E staining of heart, liver, spleen, and kidney in each group. Scale = 50 μm.