A multifunctional injectable microsphere with enhanced near-infrared photo-antibacterial, ROS scavenging, and anti-inflammatory properties for periodontitis treatment

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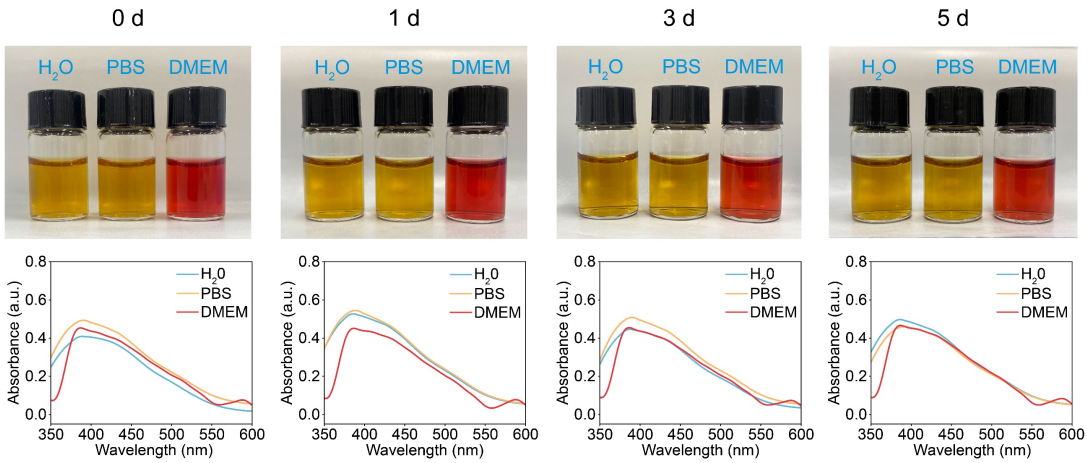

Figure S1. Photographs of Fe-Cur NPs in H_2O, PBS, and DMEM medium for 5 days and the corresponding UV-vis spectra.

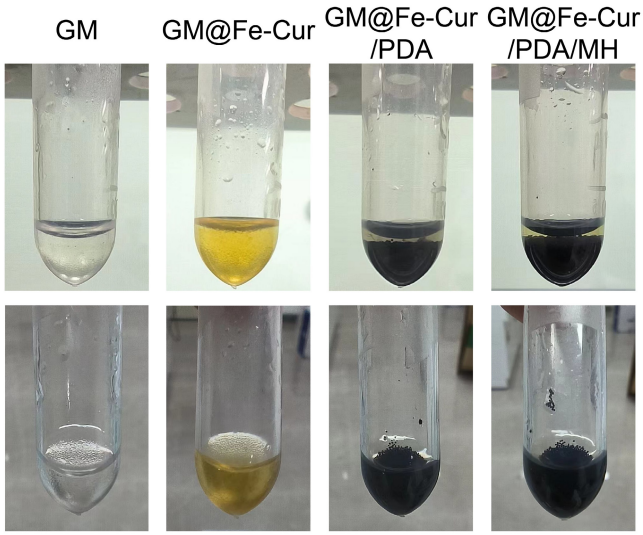

Figure S2. Overall views of four microspheres.

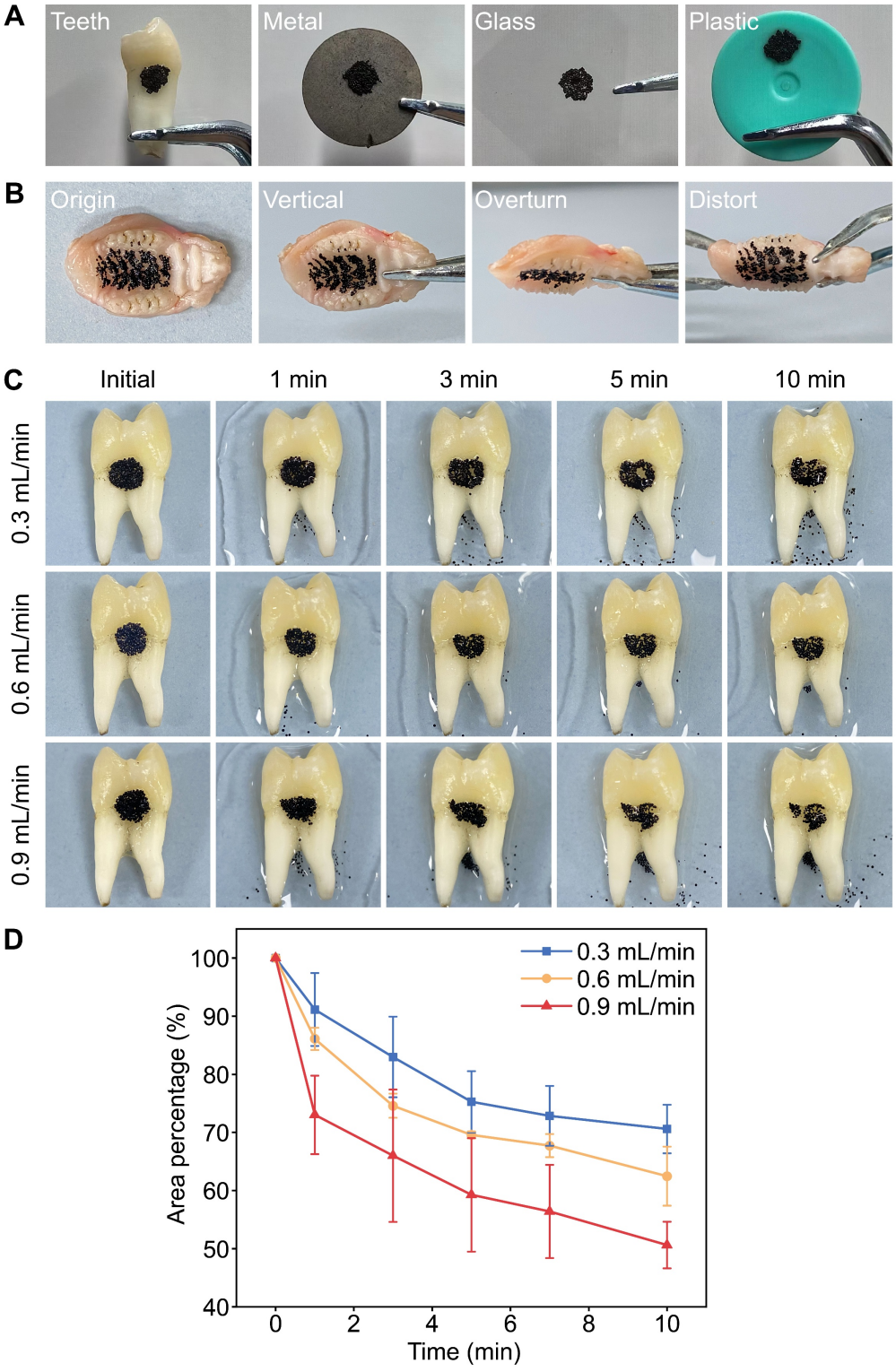

Figure S3. The adhesion test of the GM@Fe-Cur/PDA/MH. (A) Photographs of GM@Fe-Cur/PDA/MH adhered on different materials, such as teeth, metal, glass, and plastic. **(B)** Photographs of the GM@Fe-Cur/PDA/MH adhered on the isolated maxillary gingival tissue of rat before and after overturning and

twisting. **(C)** The Area of retained GM@Fe-Cur/PDA/MH after being subjected to different flow rates over a period of time. **(D)** Quantitative analysis of residual GM@Fe-Cur/PDA/MH area.

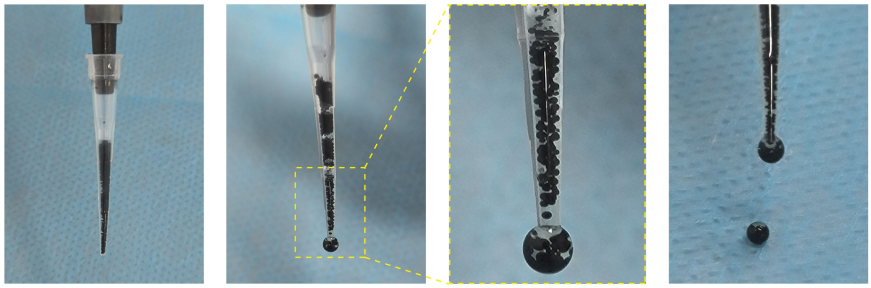

Figure S4. The injectability of GM@Fe-Cur/PDA/MH.

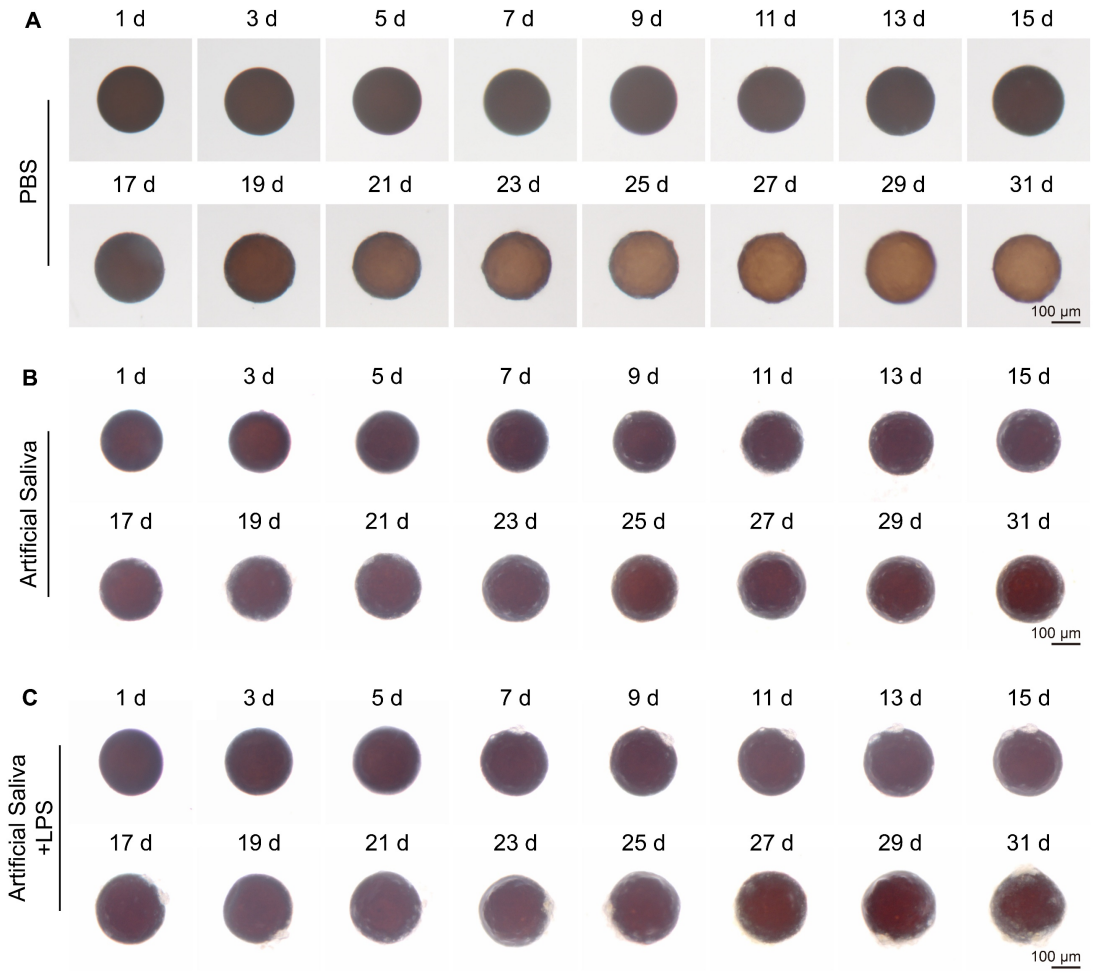

Figure S5. Degradation test of GM@Fe-Cur/PDA/MH. Morphological changes of GM@Fe-Cur/PDA/MH were soaked in different solution media for one month: **(A)** PBS, **(B)** Artificial saliva, and **(C)** Artificial saliva + LPS.

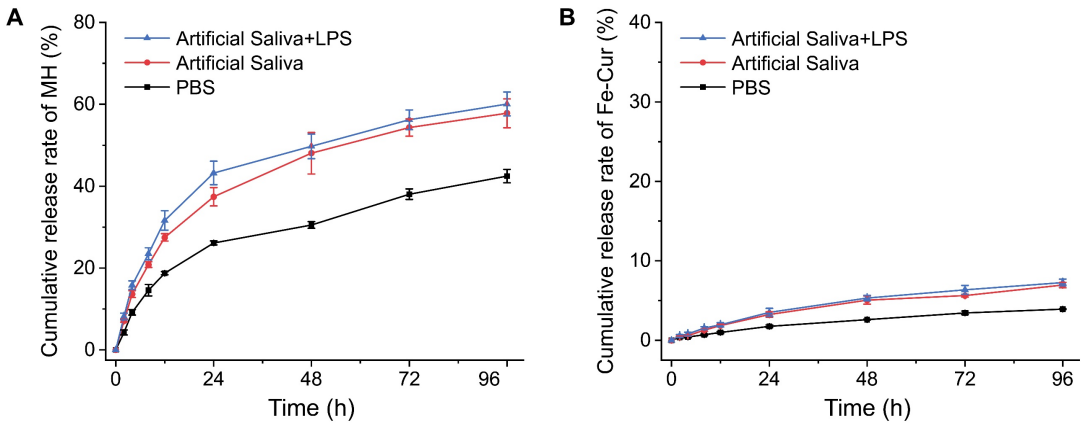

Figure S6. Drug release studies of GM@Fe-Cur/PDA/MH. (A) Cumulative release of MH from GM@Fe-Cur/PDA/MH in the three environments. **(B)** Cumulative release of Fe-Cur NPs from GM@Fe-Cur/PDA/MH in the three environments.

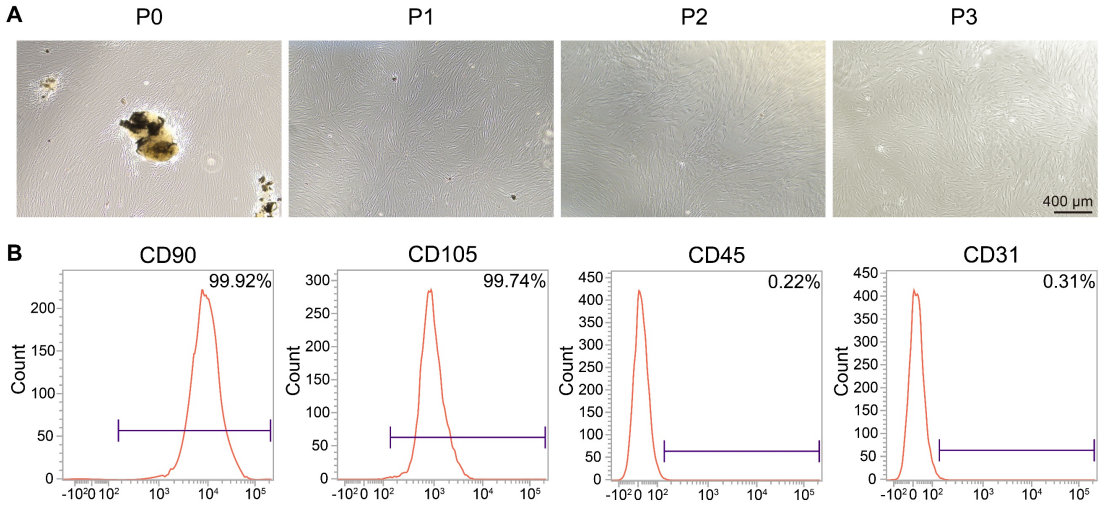

Figure S7. Culture and identification of hPDLSCs. (A) Morphology of hPDLSCs. **(B)** Flow cytometric analysis of cell surface markers, including the expression of CD90, CD105, CD45, and CD31 in hPDLSCs.

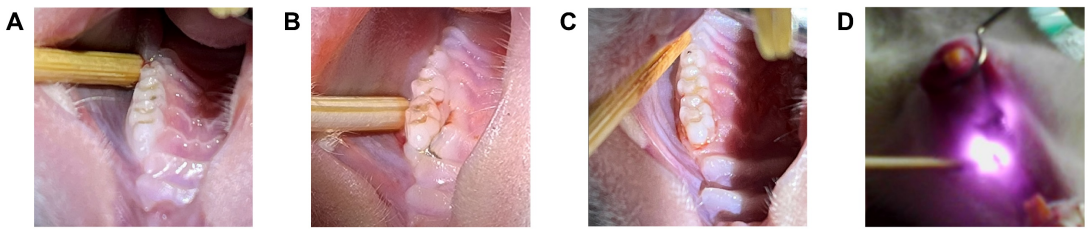

Figure S8. Schematic representation of the animal experimental treatment protocol. (A) Healthy periodontal tissue. **(B)** Placement of ligature wire on the maxillary first molar and injection of bacterial suspension. **(C)** Removal of the ligature wire after 2 weeks of local ligation. **(D)** Irradiation of the ligation site with 808 nm NIR light.

Table S1. Primer sequences used in qRT-PCR study.

Gene	Primer Sequence (5'-3')
Caspase-1	F: TATCCAGGAGGGAATATGTG R: ACAACACCACTCCTTGTTTC
NQO-1	F: CGCCTGAGCCCAGATATTGT R: ACCACTGCAATGGGAACTGA
IL-18	F: AGTAAGAGGACTGGCTGTGACC R: TTGGCAAGCAAGAAAGTGTC
TNF-α	F: CGCTGAGGTCAATCTGC R: GGCTGGGTAGAGAATGGA
IL-1β	F: TGGTGTGTGACGTTCCC R: TGTCCATTGAGGTGGAGAG
IL-10	F: GCCAGAGCCACATGCTCCTA R: GTCCAGCTGGTCCTTTGTTTG
Arg-1	F: GGGCTCCTTTCAGGACTAGATA R: CGAAGCAAGCCAAGGTTAAAG
β-actin	F: GGCTGTATTCCCCTCCATCG R: CCAGTTGGTAACAATGCCATGT