Supporting Information

An Injectable Hyaluronic Acid Hydrogel Integrating Fe(III)-Coordination and Polymyxin B Grafts for Accelerated Healing of Infected Diabetic Wounds

Mingchen Zhang [a,†], Wei Zhao [b,c,†], Yang Zhou [b,c], Ruiting Shen [a], Yiqiong Sun [a], Lei Jiang [b,c,d,*] and Jiantao Zhang [c,d,*]

a. Ningbo No. 2 Hospital, Ningbo 315010, PR China.

b. Laboratory of Advanced Theranostic Materials and Technology, Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences, Ningbo 315201, PR China

c. Ningbo Cixi Institute of Biomedical Engineering, Cixi 315300, PR China

d. Zhejiang Key Laboratory of Biopharmaceutical Contact Materials, Ningbo 315201, China

† M.Z and W.Z. contributed equally to this work.

In Vitro Release of Polymyxin B and Fe^{3+} from HA-B@Fe Hydrogel

An accurately weighed sample of the HA-B_3@Fe hydrogel (2.0 g) was placed into a 50 mL centrifuge tube containing 40 mL of phosphate-buffered saline (PBS, 0.01 M, pH 7.4) pre-warmed to 37 °C. The tube was incubated at 37 °C under continuous shaking at 100 rpm. At predetermined time intervals (10 min, 20 min, 40 min, 1 h, 2 h, 4 h, 6 h, 9 h, 12 h, and 24 h), 4.0 mL of the release medium was carefully withdrawn and replaced with an equal volume of fresh PBS (37 °C) to maintain sink conditions. The collected samples were immediately filtered through a 0.45 μm syringe filter and stored at 4 °C until analysis. The cumulative release of polymyxin B and Fe^{3+} was calculated. Specifically, the concentration of polymyxin B in the release samples was determined by UV–Vis spectrophotometry (Cary 3000, Agilent, USA). Absorbance was measured at 215 nm using a quartz cuvette with a 1 cm path length. The concentration of Fe^{3+} ions in the release medium was measured by flame atomic absorption spectrometry (FAAS, Arcos, Spectro, Germany). The operating wavelength was set at 248.3 nm, with a slit width of 0.2 nm and an air–acetylene flame. All release samples were acidified with 2% (v/v) HNO_3 prior to analysis to ensure complete atomization. The cumulative release (%) of polymyxin B and Fe^{3+} at each time point was calculated using the following equation:

$$Cumulative\ release\ (\%) = \frac{C_n \times V_0 + \sum_{i=1}^{n-1} C_i \times V_e}{m_{total}} \times 100$$

Where C_n is the concentration of the analyte at time point n, V_0 is the total volume of the release medium (40 mL), V_e is the volume of medium withdrawn at each sampling (4 mL), and m_{total} is the total amount of polymyxin B or Fe^{3+} initially present in the hydrogel.

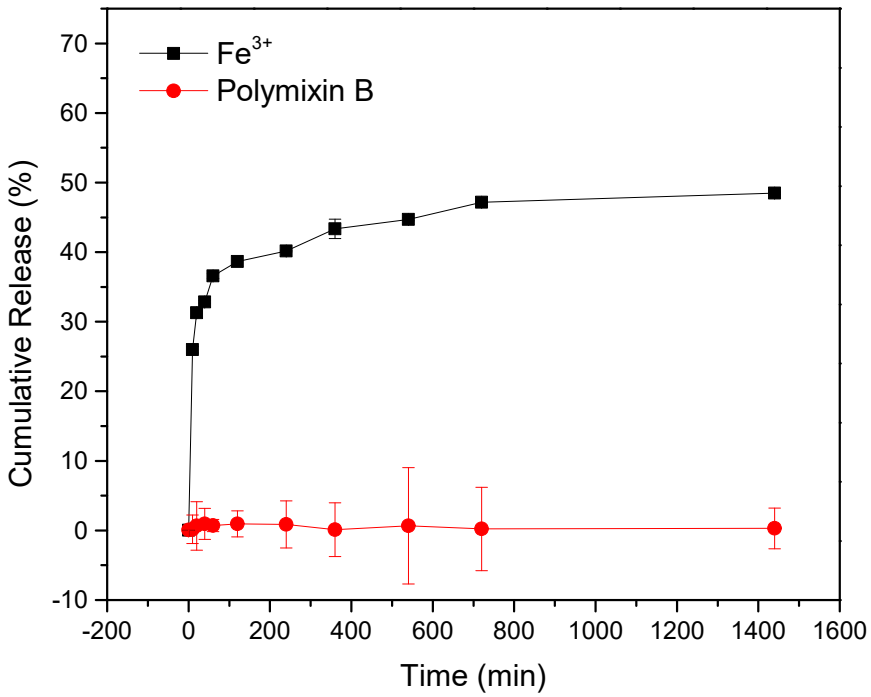

Fig. S1 *In vitro* cumulative release profiles of polymyxin B and Fe^{3+} from the HA-B@Fe hydrogel in phosphate-buffered saline (PBS, 0.01 M, pH 7.4) at 37 °C. Data are presented as mean ± SD (n = 3).