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Hydrogen Sulfide Releasing Hydrogel for Alleviating Cardiac Inflammation and Protecting Against Myocardial Ischemia-Reperfusion Injury

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1. H_2S release

The H_2S releasing profile of 4-amiobenzothioamide, KAT, and carboxymethylated keratin were tested with a sulfur ion electrode(1 mM GSH, pH 8). As depicted in Fig.S1, the grafting of 4-amiobenzothioamide to keratin effectively extended the release period of H_2S and slowed down the release rate of H_2S. In addition, carboxymethylated keratin stably existed in the same concentration of GSH solution without the release of H_2S, which proved that H_2S came from 4-amiobenzothioamide rather than keratin.

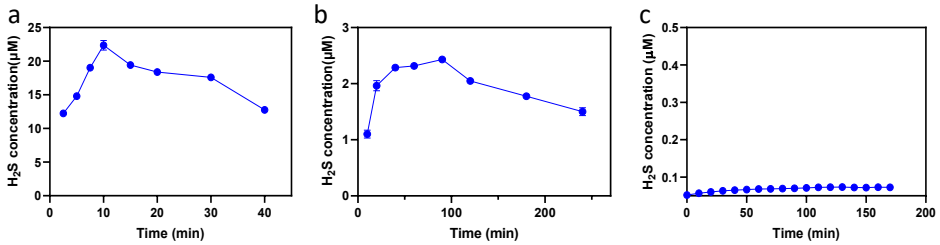

Fig. S1 The H_2S release of 4-amiobenzothioamide(a), KAT(b), and carboxymethylated keratin(c).

2. HE staining

In the preliminary experiment, rats were subjected to ischemia for 60 min, followed by reperfusion without treatment of hydrogel. It was found that the infarct size was relatively smaller after the addition of Pluronic F127 hydrogel as compared to the control group treated for 3 d, following I/R induction(Fig.S2). These might be due to hydrogel itself could provide mechanical support to myocardial tissue and promoting healing of myocardial ischemia/reperfusion injury. Since the use of hydrogel itself can provide mechanical support to myocardial tissue and promote healing of myocardial ischemia/reperfusion injury, the blank hydrogel group was used as a control group to verify the effect of hydrogen sulfide release in our experiments rather than compared with untreated I/R animals.

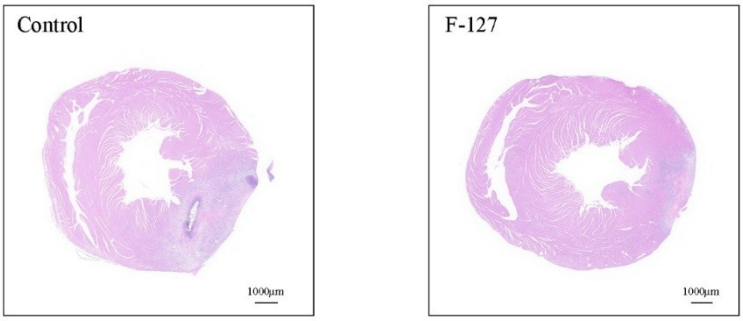

Fig. S2 Representative images of H.E. staining of ischemic hearts of blank control and F-127 hydrogel-treated rats for 3 d after myocardial I/R induction.