Supplementary Information

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^{1}H-NMR spectra in Figure S1, FTIR data in Figure S2 illustrated the successful synthesis of the Hep-PEG-N_3, as proven by the appearance of the characteristic absorption around 2100 cm^{-1} representing the azide group in the FTIR spectrum.

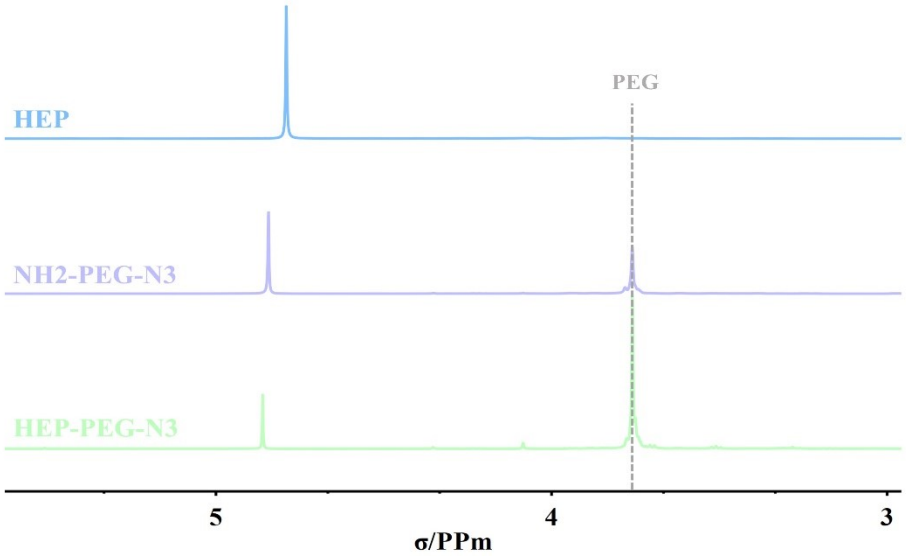

Figure S1: ^{1}H-NMR spectrum of Hep, NH_2-PEG-N_3, Hep-PEG-N_3.

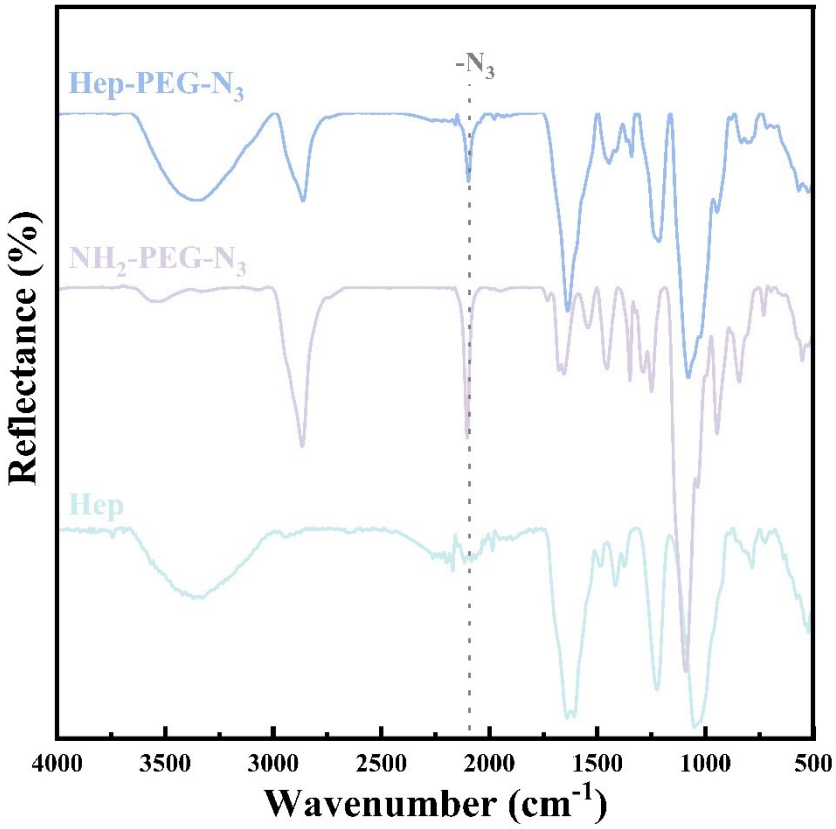

Figure S2: FTIR spectrum of Hep, NH_2-PEG-N_3, Hep-PEG-N_3.

DSPE-PEG2000-NHS and REDV peptides of equal molar ratio were weighed, dissolved in RO water, and stirred for 48 h, the reaction solution was dialyzed (MWCO = 2000 D) against deionized water for 48 h and then lyophilized to obtain the product (DSPE-PEG-REDV). The structures of the DSPE-PEG-REDV were testified by FTIR spectra. In Figure S3, the appearance of the characteristic absorption around 2800 cm^{-1} and 1200 cm^{-1} represented the structure of PO^{4-} and -$C(CH_3)$, indicating the successful preparation of DSPE-PEG2000-REDV.

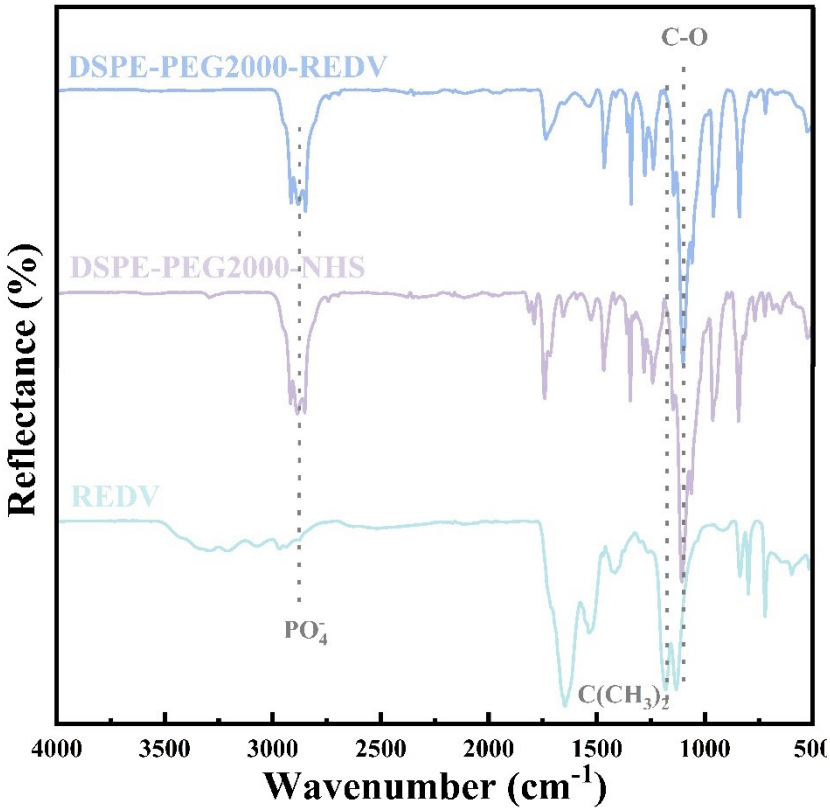

Figure.S3 FTIR spectra of REDV, DSPE-PEG2000-NHS, DSPE-PEG2000-REDV.

The exosomes of human umbilical vein vascular endothelial cells were isolated by high-speed centrifuge method. Figure S4a is the results of the Western Blot assay presenting CD9, CD63, and CD81 bands. As detected by the NTA (Figure S4b), exosomes exhibited an average hydrodynamic diameter of 163.8 nm and showed a relatively high concentration of 1.3×10^{11} particles per milliliter. Finally, transmission electron microscopy (TEM) images of isolated exosomes (Figure S4c) showed the typical teacup shape of exosomes.

The method to obtain exosomes from HUVECs: HUVECs were routinely cultured in DMEM medium containing 10% fetal bovine serum (5% CO_2, 37 °C), when the cells were grown to 90% confluence, the complement culture medium was removed and the DMEM medium without serum was added. After starvation culture for 36 h, the culture supernatant was collected. The typical ultracentrifugation method was employed to separate model exosomes. At 4 ºC, low speed centrifugation (300g, 10 min and 2000g, 20 min) was applied to remove cells and cell fragments, high-speed centrifugation (10000g, 30 min at 4 ºC) was applied to remove the large extracellular vesicles. Then, the supernatant was centrifuged at 110000g for 2 h (4 ºC). The resulting exosome pellets

were resuspended in PBS and kept at -80 ºC until use.

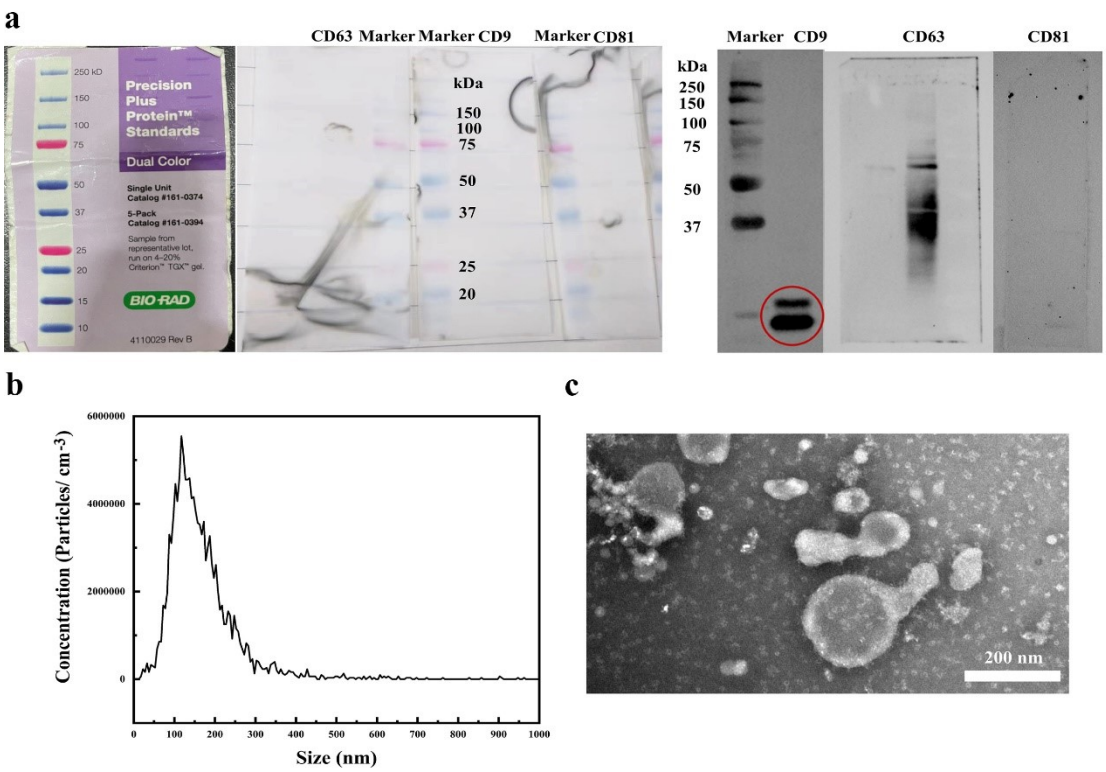

Figure S4 a) Western blotting results demonstrating the three exosomal makers, WB analysis of all markers used the same marker; b) Size distribution map of exosomes under NTA; c) TEM images of exosomes.

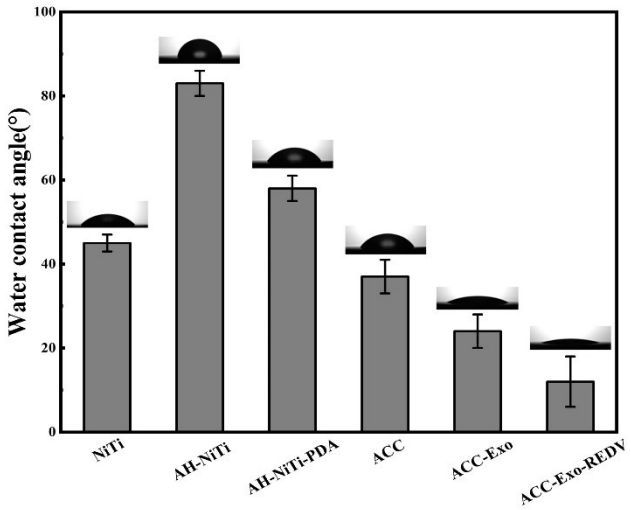

Figure S5 Water contact Angle changes and images of NiTi, AH-NiTi, AH-NiTi-PDA, ACC, ACC-Exo, and ACC-Exo-REDV.

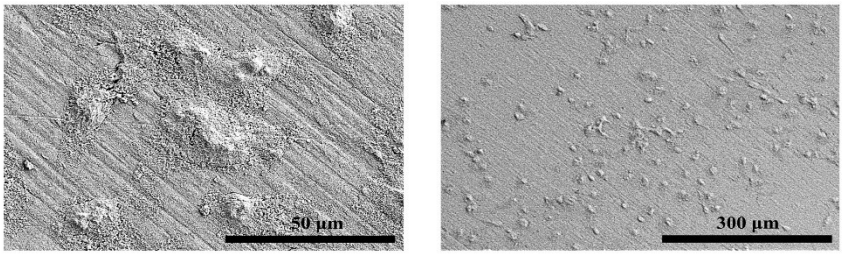

Figure.S6 SEM images of cell spreading state of HUVECs growth on the surface of ACC-Exo-REDV for 72 h.

Figure S7 shows the weight gain ratio of NiTi, ACC, and ACC-Exo-REDV materials before and after hemicorporeal blood circulation. The weight increase was due to blood coagulation on the surface of the material. The weight gain ratio of ACC and ACC-Exo-REDV coated with anticoagulant coating was significantly lower than that of NiTi material, because of the excellent anticoagulant effect.

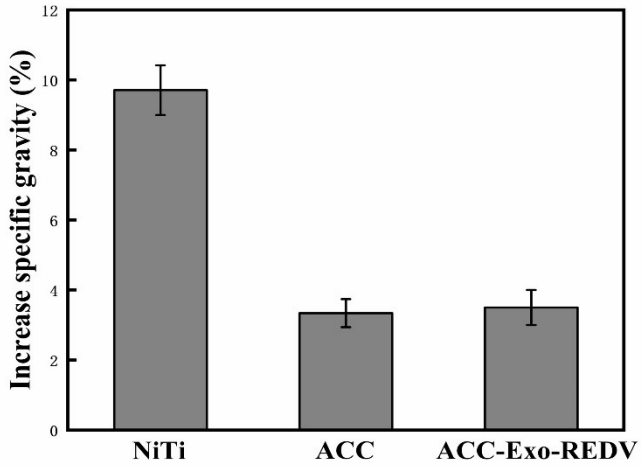

Figure S7 Ratio of weight gain of NiTi, ACC, ACC-Exo-REDV material before and after blood compatibility test.

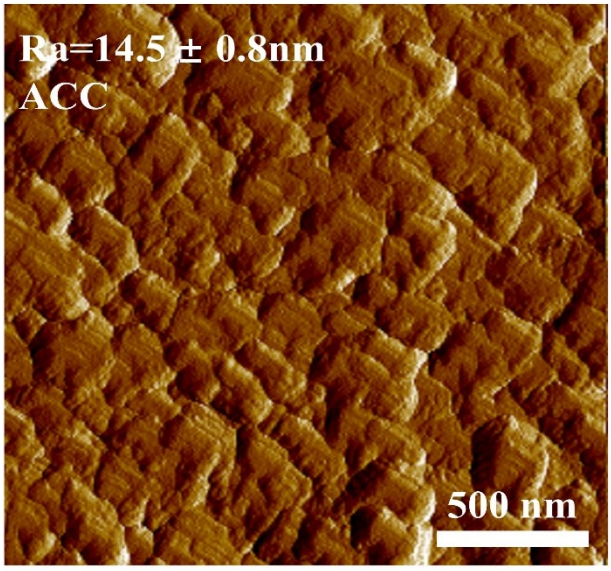

Figure S8 Atomic force microscope image of ACC.

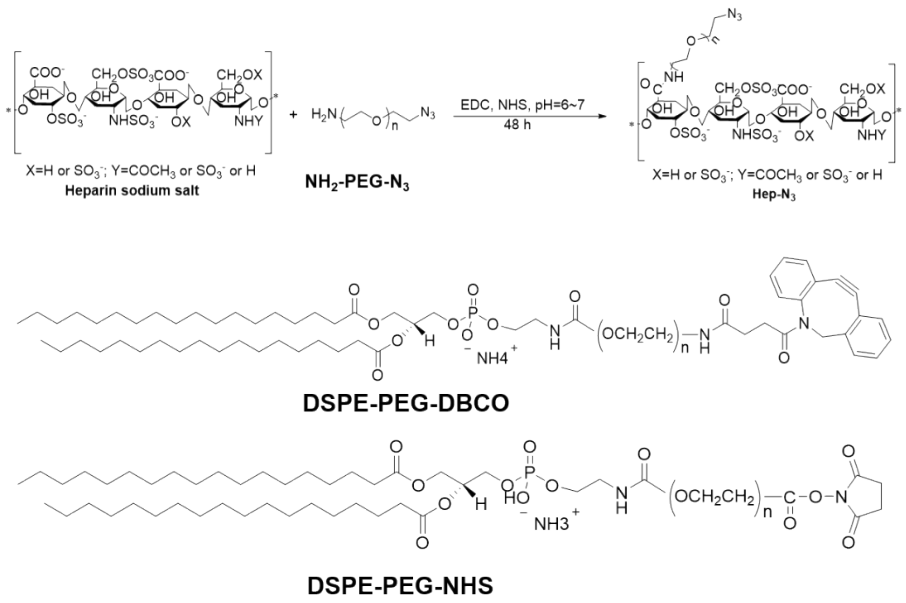

Figure S9: The chemical structures of major chemical regents.

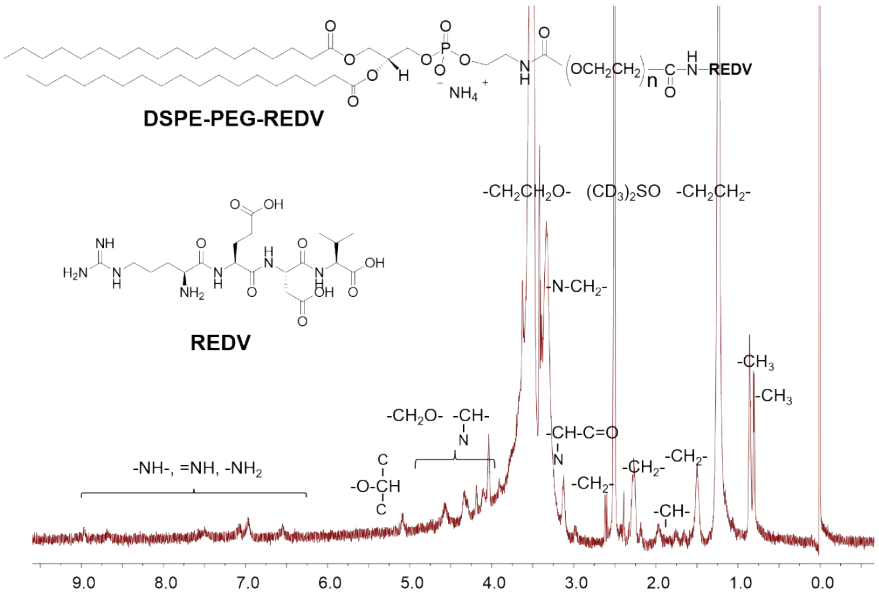

Figure S10: ^{1}H NMR spectrum of DSPE-PEG-REDV recorded in d6-DMSO with relevant peak assignments.