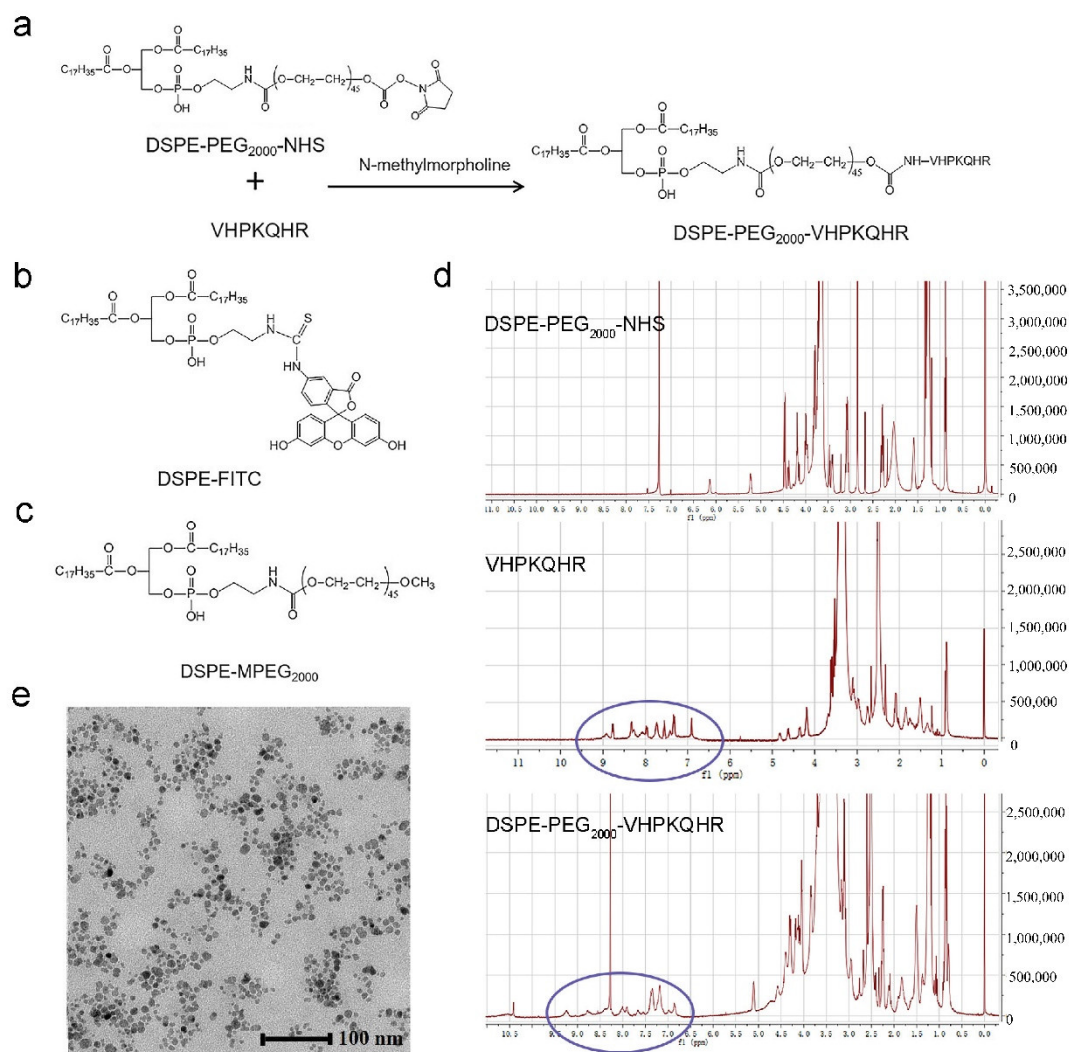
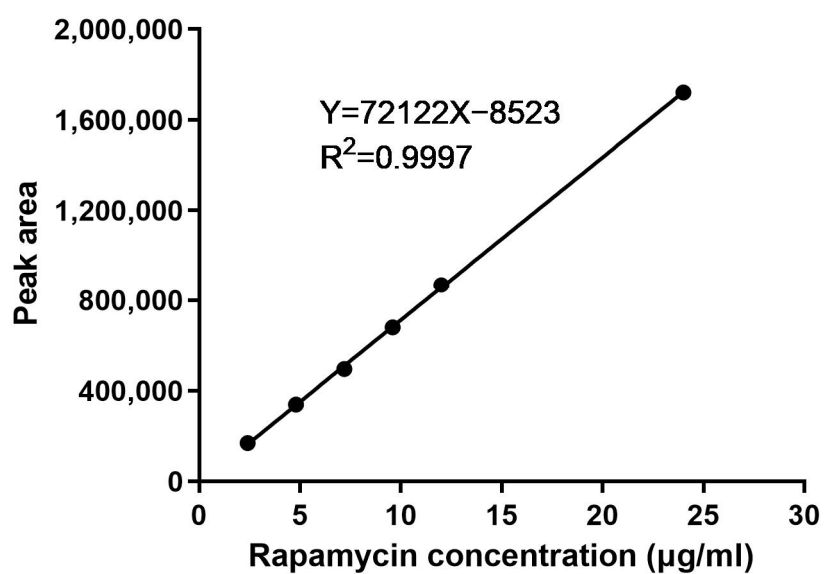


Supplementary Material

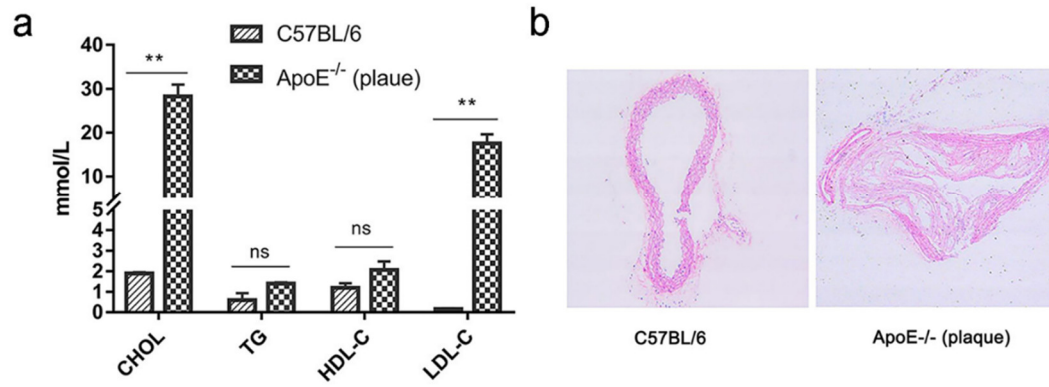
1 Supplementary Figures



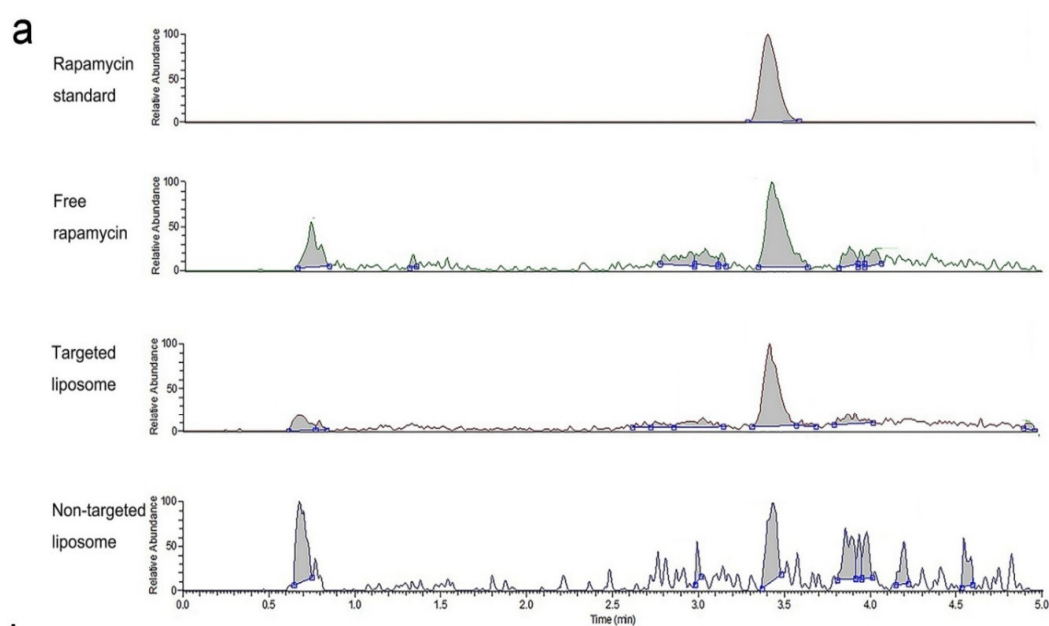
Supplementary Figure S1. Structure and characterization of materials used in the synthesis of Rap/Fe₃O₄@VHP-Lipo. (a) Synthetic chemical reaction formula of DSPE-PEG₂₀₀₀-VHPKQHR. (b) The chemical structure of DSPE-FITC. (c) The chemical structure of DSPE-MPEG₂₀₀₀. (d) ¹H NMR of reaction substrate DSPE-PEG₂₀₀₀-NHS, VHPKQHR peptide and reaction product DSPE-PEG₂₀₀₀-VHPKQHR. (e) The morphology of USPIO-BSA (Fe₃O₄) under TEM.



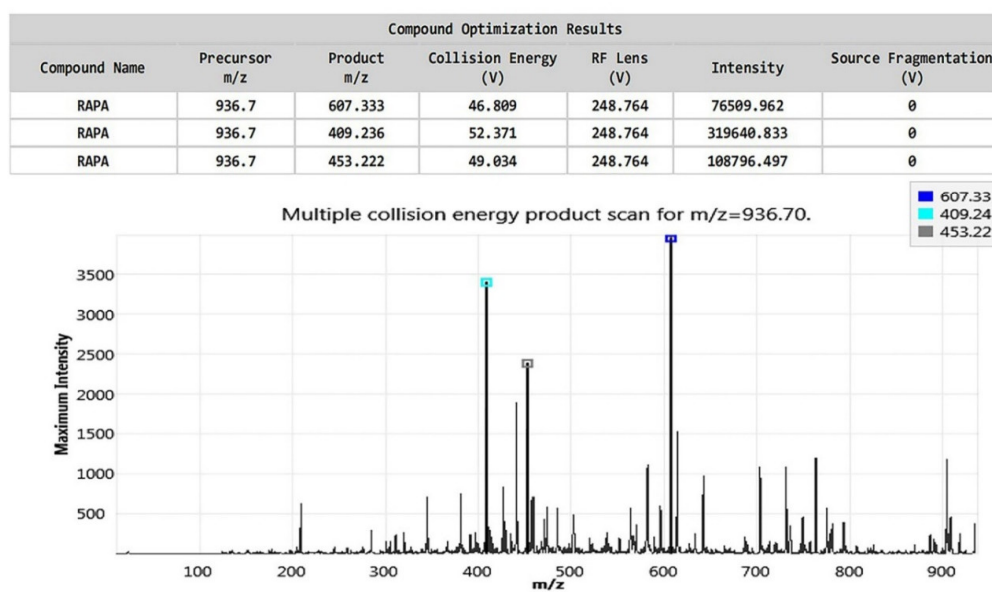
Supplementary Figure S2. Establishment of a method for the analysis of rapamycin by liquid chromatography. Linear relationship between rapamycin concentration and peak area measured by HPLC.



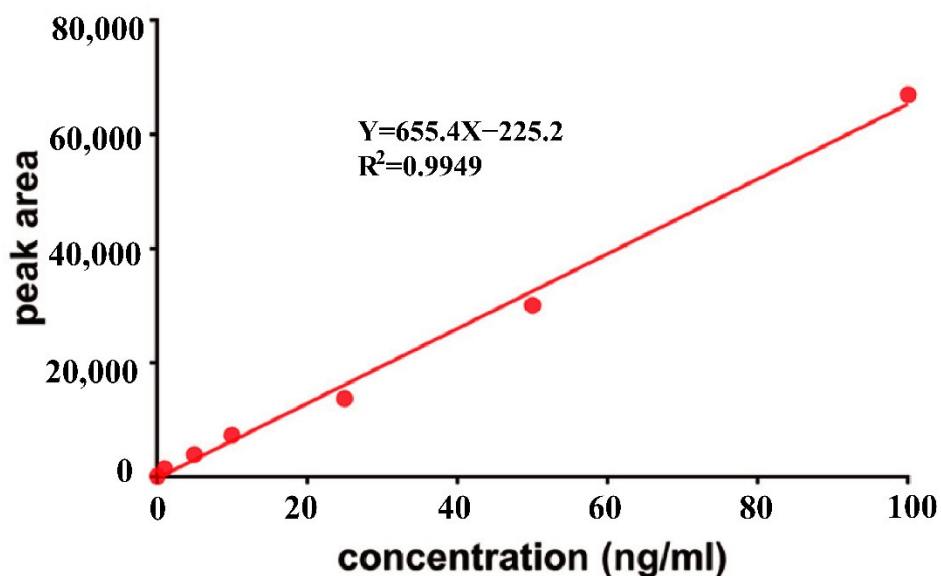
Supplementary Figure S3. Construction of atherosclerosis model mouse. (a) Comparison of blood lipid indexes of C57BL/6 mice fed with normal diet and ApoE^{-/-} mice fed with high-fat diet (HFD) for 4 months. (b) H&E stained sections of isolated aorta of C57BL/6 mice and ApoE^{-/-} mice with plaque. (** $p < 0.01$, ns $p > 0.05$, mean = \pm SD).



b



Supplementary Figure S4. Exploring the Chromatographic and Mass Spectrometric Conditions of Rapamycin. (a) The retention time of rapamycin in the liquid chromatography column of rapamycin standard, free rapamycin treated group blood samples, Rap/Fe₃O₄@Lipo treated group blood samples and Rap/Fe₃O₄@VHP-Lipo treated group blood samples. (b) The mass spectrum of rapamycin and the three most significant fragment ions.



Supplementary Figure S5. Establishment of a liquid mass spectrometer method for the analysis of rapamycin concentration. Linearity between rapamycin concentration and peak area determined by LC-MS.

2 Supplementary table

Supplementary Table S1. Determination of the drug concentration in liposomes by HPLC. Take 200 μ L of liposome solution, dilute to 10 mL with methanol and measure drug concentration by HPLC.

Area of peak	Determination of concentration	Drug loading	Encapsulated	The content of rapamycin
1327176.6	18.52 μ g/ml	5.5%	92.6%	0.926 mg/ml

Theoretical concentration = $1000\mu\text{g/ml} \times 0.2/10 = 20\mu\text{g/ml}$, Encapsulated = $18.52/20 \times 100\% = 92.6\%$

The content of rapamycin = $1\text{ mg/ml} \times 92.6\% = 0.926\text{ mg/ml}$

Drug loading = $0.926 \times 2 / (0.926 \times 2 + 30 + 2) \times 100\% = 5.5\%$