

Supplementary Materials

Table S1. Sequence of primers

	Forward primer	Reverse primer
GAPDH	5'-GAGAGTGTTCCTCGTCCCG-3'	5'-ATCCGTTACACCGACCTTC-3'
iNOS	5'-GAGCAACTACTGCTGGTGGT-3'	5'-CGATGTCATGAGCAAAGGCG-3'
IL-1 β	5'-ATGCCACCTTTTGACAGTGATG-3'	5'-AGCTTCTCCACAGCCACAAT-3'
TNF- α	5'-ATGGCCTCCCTCTCATCAGT-3'	5'-CCACTTGGTGGTTTGTGAGTG-3'

Table S2. Characterization of NPs

Group	Size(nm)	Polydispersity	Zeta(mV)
PP NPs	155.42 $\pm$ 2.79	0.24 $\pm$ 0.05	-21.03 $\pm$ 1.63
PPP NPs	158.08 $\pm$ 5.62	0.16 $\pm$ 0.01	-18.93 $\pm$ 0.75
PPP@RAP NPs	162.63 $\pm$ 3.25	0.22 $\pm$ 0.01	-28.30 $\pm$ 0.46

Table S3. Cell Viability Assessment Under Varied Irradiation Parameters

Group	Acoustic intensity(mW/cm ²)	Exposure Time(min)		
		10	20	30
Control group (sham irradiation)	0	0.903 $\pm$ 0.153	0.588 $\pm$ 0.107	0.930 $\pm$ 0.231
Irradiation group	30	1.474 $\pm$ 0.107*	1.185 $\pm$ 0.156	1.419 $\pm$ 0.187
	60	1.329 $\pm$ 0.120	1.411 $\pm$ 0.083	1.105 $\pm$ 0.106*
	100	1.343 $\pm$ 0.143*	1.805 $\pm$ 0.064*	1.157 $\pm$ 0.085*
	150	0.529 $\pm$ 0.028	0.570 $\pm$ 0.041	0.552 $\pm$ 0.180

Compare with the control group, * $P < 0.05$.

Supplementary Figure

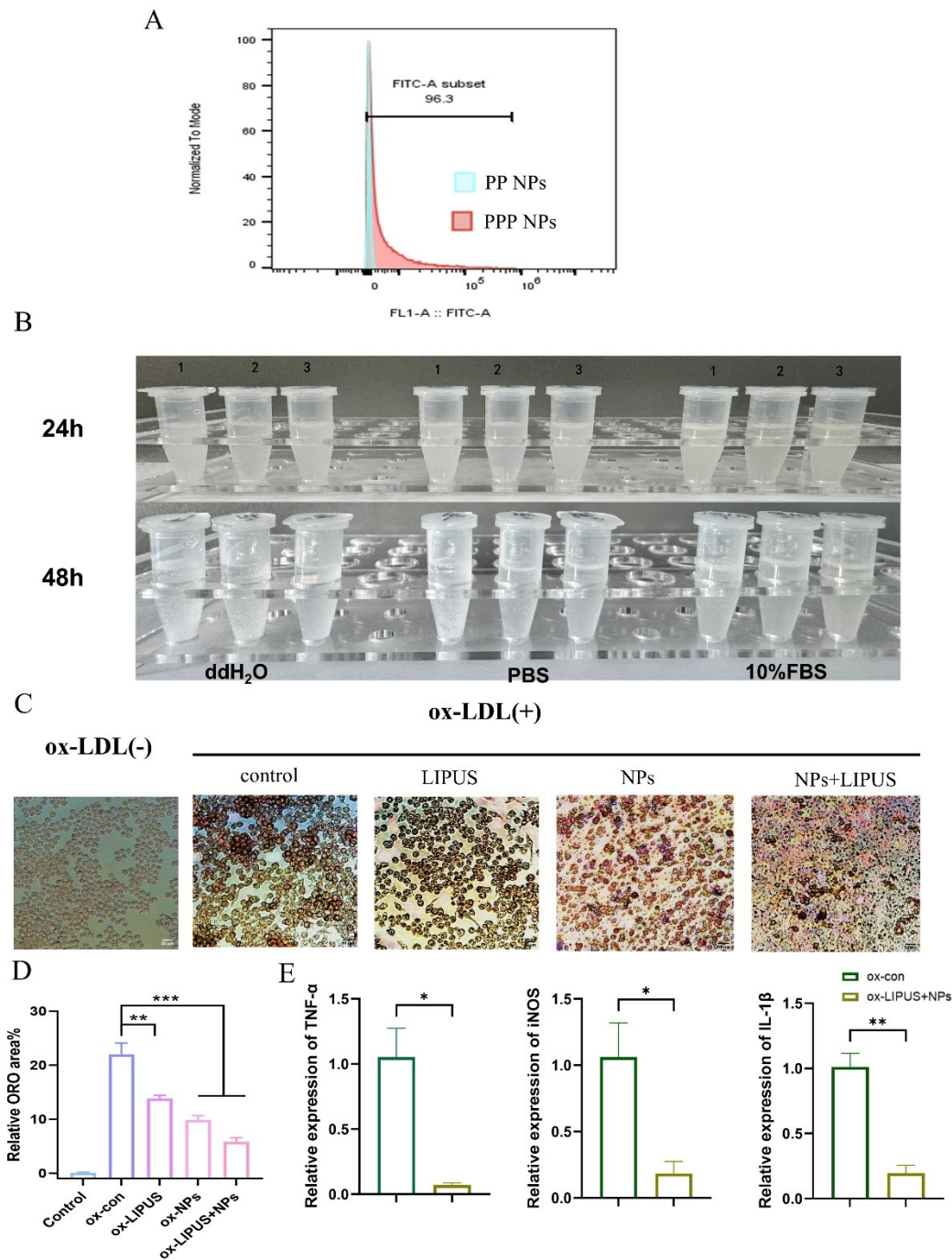


Figure S1. (A) Determination of the linkage ratio of peptides PP1 and PP NPs by single-channel flow cytometry. (B) Appearance of each group of NPs resuspended in different solutions (1. PP NPs, 2. PPP NPs, 3. PPP@RAP NPs) at 24h and 48h. (C-D) ORO staining micrographs and quantitative lipid accumulation analysis demonstrating lipid droplet formation in foam cells under different treatment conditions (Scale bar= 50 μ m).

(E) Relative mRNA expression levels of key inflammatory markers (iNOS, TNF- α , IL-1 β) in foam cells following combined treatment. (* P <0.05, ** P <0.01 and *** P <0.001). NPs : Nanoparticles, LIPUS: low intensity pulsed ultrasound.

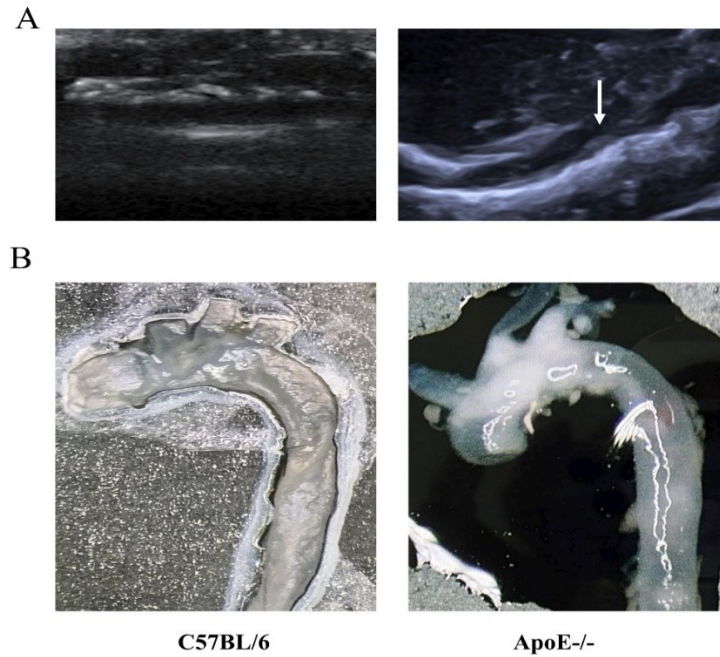


Figure S2. Ultrasound images and body microscopy images of C57BL/6 mice and ApoE^{-/-} mice after 12 weeks of high-fat feeding (White arrows are plaques).