Supplemental materials

Supplemental Materials and Methods

Primary mouse smooth muscle cell culture

Primary mouse aortic vascular smooth muscle cells (VSMCs) were isolated from 8-week-old C57BL/6J mice as described[1]. Briefly, the aortas were excised, washed with PBS and incubated in DMEM containing 1mg/mL Collagenase type II (Sigma, MilliporeSigma Corp, St. Louis, MO, USA) for 15min. Then the adventitia was removed and endothelial cells were scraped off. After that, the vessels were incubated with DMEM containing 1mg/mL Collagenase type I (Sigma) and 0.125mg/mL Elastase type III (Sigma) for 1h with intermittent pipetting. Then cells were centrifuged and the collected primary VSMCs were maintained in DMEM containing 10% FBS, 1% penicillin and 1% streptomycin. Primary VSMCs between passages 3 and 10 were used in the experiments. For *in vitro* AS simulation, primary VSMCs were treated with ox-LDL (Shanghai leuven biological technology, Shanghai, China) at the concentration of 50 mg/ml for 24 h. For SRT1720 treatment, cells were treated with SRT1720 at the concentration of 10μM for 4h.

Supplemental Tables

Supplemental Table 1: Primer sequences for quantitative Real-time PCR

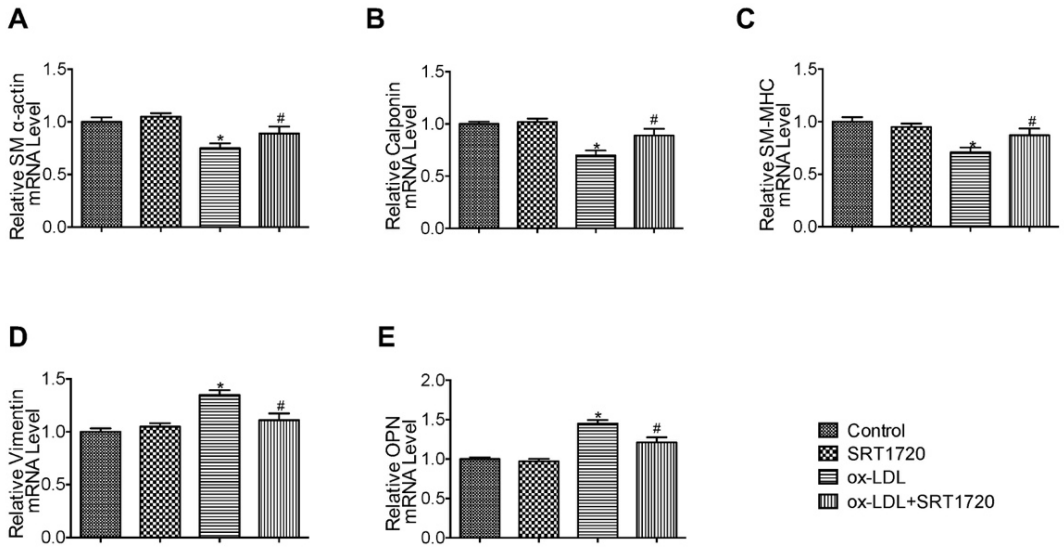
Gene name	Primer sequence
GAPDH	F: 5'-AACTTTGGCATTGTGGAAGG-3' R: 5'-ACACATTGGGGGTAGGAACA-3'
SM α-actin	F: 5'-CTGACAGAGGCACCACTGAA-3' R: 5'-GAAATAGCCAAGCTCAG-3'
Calponin	F: 5'-GCACATTTTAACCGAGGTCC-3' R: 5'-TGACCTTCTTCACAGAACCC-3'
SM-MHC	F: 5'-TGGACACCATGTCAGGGAAA-3' R: 5'-ATGGACACAAGTGCTAAGCAGTCT-3'
Vimentin	F: 5'-AGGAAATGGCTCGTCACCTTCGTGAATA-3' R: 5'-GGAGTGTCGGTTGTTAAGAACTAGAGCT-3'
Osteopontin (OPN)	F: 5'-CTTTCACTCCAATCGTCCCTAC-3' R: 5'-GCTCTCTTTGGAATGCTCAAGT-3'

Supplemental Table 2: Characteristics of synthesized nanomedicines

	Zeta potential	Size (d.nm)	Size (TEM)	PDI
ICG/SRT@HSA NMs	-12.5±1.3	63.4±4.56	22.2	0.363±0.008
ICG/SRT@HSA-pept NMs	-19.1±1.6	89.14±7.32	33.7	0.441±0.063

Supplemental Figures and Figure legends

Supplemental Figure S1

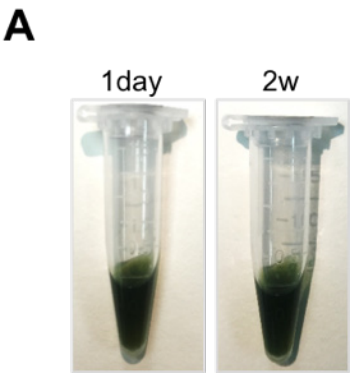


Supplemental Figure S1. Sirt1 activator SRT1720 inhibits primary VSMCs phenotype switching.

Quantitative Real time PCR results revealed ox-LDL treatment induced primary VSMCs phenotype transition, evidenced by decreased contractile proteins level (SM α-actin, Calponin and SM-MHC, $P < 0.05$, **A-C**) and increased synthetic proteins level (Vimentin and OPN, $P < 0.05$, **D-E**). Furthermore, Sirt1 activator SRT1720 markedly reversed the protein profile changes induced by ox-LDL ($P < 0.05$).

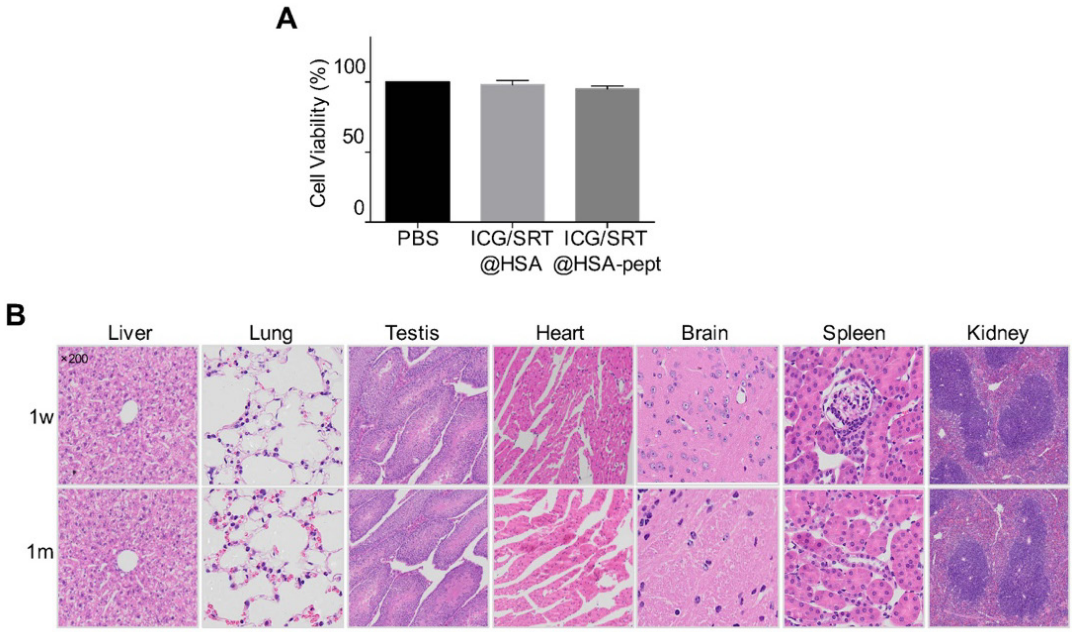
*$P < 0.05$ *vs.* control group; $^{\#}P < 0.05$ *vs.* ox-LDL group

Supplemental Figure S2



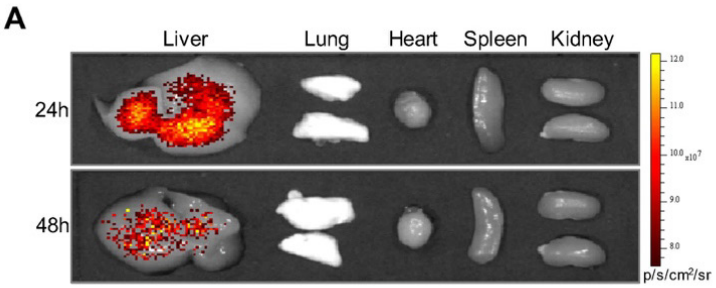
Supplemental Figure S2. The colloidal stability of ICG/SRT@HSA-pept NMs.
A. No obvious precipitation after the ICG/SRT@HSA-pept NMs being kept in room temperature for two weeks.

Supplemental Figure S3



Supplemental Figure S3. Biocompatibility of synthesized NMs.
A. Synthesized nanomedicines of ICG/SRT@HSA NMs and ICG/SRT@HSA-pept NMs did not affect VSMCs viability. **B.** HE staining indicated that there were no morphological changes in organs after systemic ICG/SRT@HSA-pept NMs injection.

Supplemental Figure S4



Supplemental Figure S4. Bio-distribution of ICG/SRT@HSA-pept NMs.
A. Bio-distribution of ICG/SRT@HSA-pept NMs at 24 and 48 hours post-injection.

References

(1) Sakata, Y.; Xiang, F.; Chen, Z.; Kiriyama, Y.; Kamei, C. N.; Simon, D. I.; Chin, M. T. Transcription Factor Chf1/Hey2 Regulates Neointimal Formation in Vivo and Vascular Smooth Muscle Proliferation and Migration in Vitro. Arterioscler Thromb Vasc Biol 2004**,** 24 (11), 2069-74.