

Electronic Supplementary Information

Hydroxyapatite-binding micelles for the detection of vascular calcification in atherosclerosis

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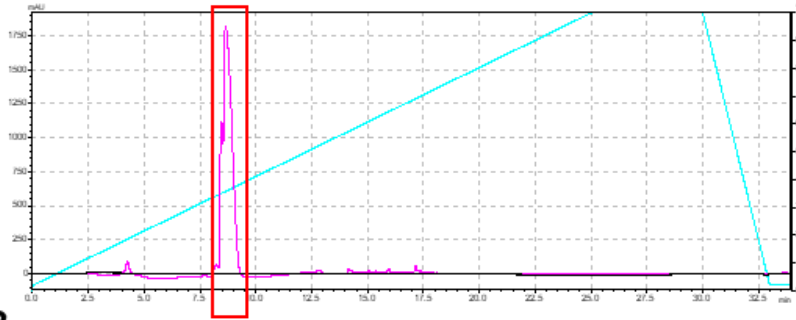
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Figures and Figure Legends

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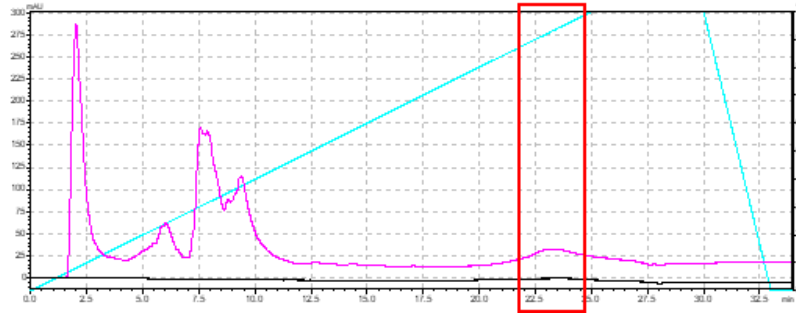


Fig. S1. HPLC chromatograms of A) HABP and B) DSPE-PEG(2000)-HABP show elution times of 8 min and 23 min, respectively.

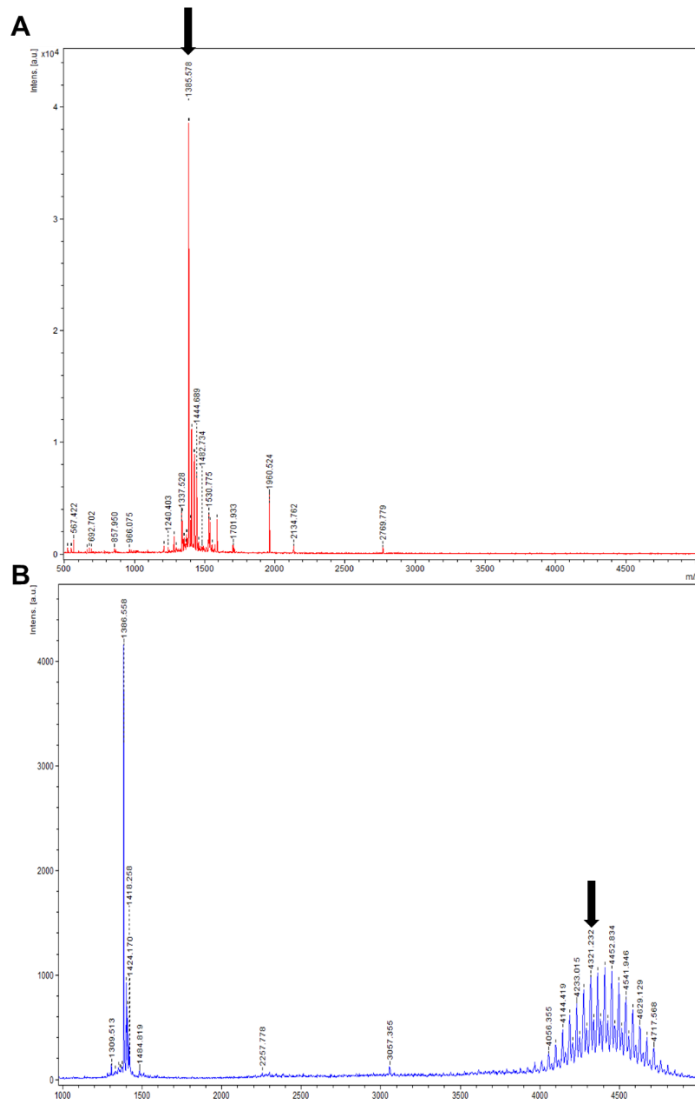


Fig. S2. MALDI mass spectrometry confirm correct molecular weight of A) purified HABP (1386 m/z, arrow) and B) purified DSPE-PEG(2000)-HABP (4321 m/z, arrow). The broad peak at 4321 m/z is characteristic of PEG products.

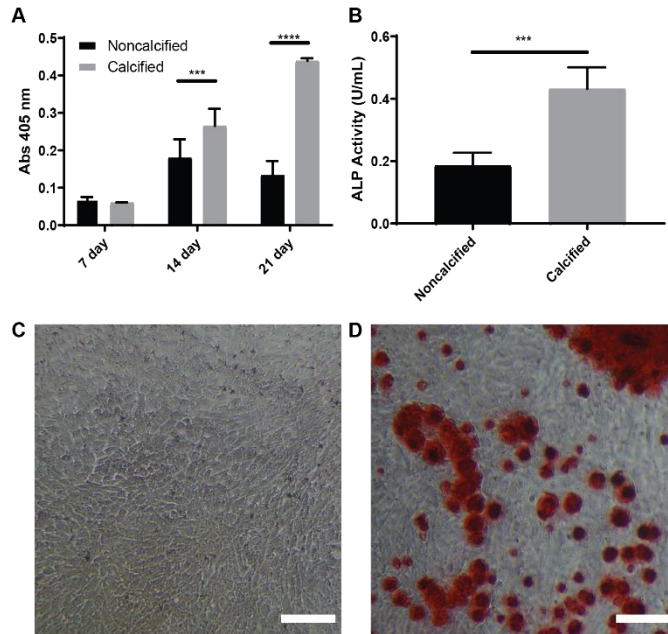


Fig. S3. MOVAS cells in osteogenic and growth media at days 7, 14, and 21 show calcifications. The amount of calcium mineralization was determined by fixing and staining cells with ARS dye. Calcification from MOVAS cells is detected from day 14 to 21. *** $p \leq 0.001$, **** $p \leq 0.0001$. B) At day 21, ALP activity of cells in osteogenic media is enhanced by more than 2-fold compared to cells in growth media. *** $p \leq 0.001$. Brightfield micrographs of ARS stained MOVAS cells at day 21 of C) growth media and D) osteogenic media show calcifications in red. Scale bar 100 μm .

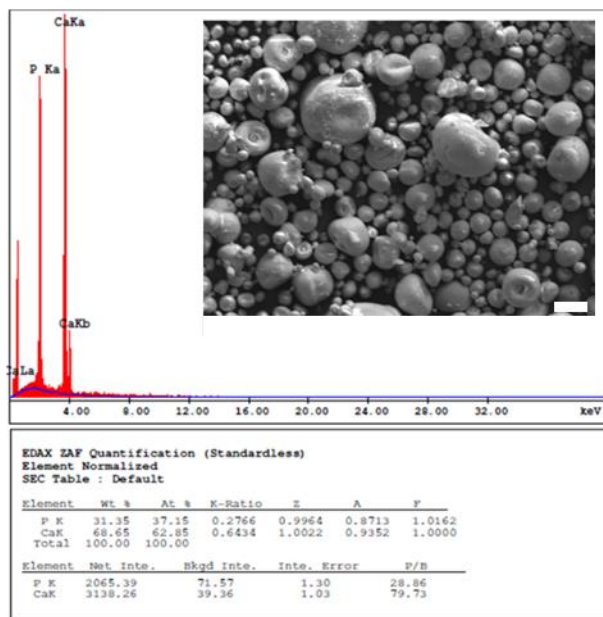


Fig. S4. SEM images show the spherical structure of commercial HA microcrystals and EDAX quantification verified the expected HA calcium phosphate ratio (1.69 ± 0.01). Scale bar 10 μm .

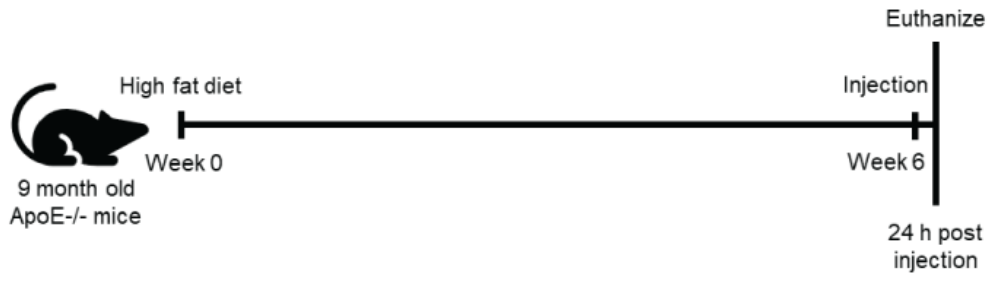


Fig. S5. Design of *in vivo* animal studies.

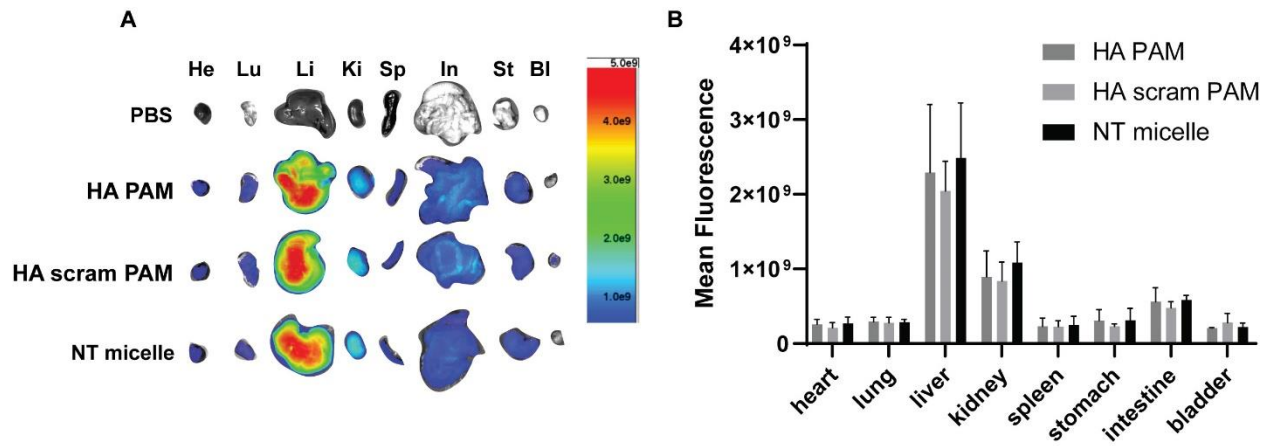


Fig. S6. A) Biodistribution of HA PAMs, HA scram PAMs, and NT micelles in ApoE ^{-/-} mice 24 hours post-administration was assessed from A) *ex vivo* fluorescence images and B) quantified.

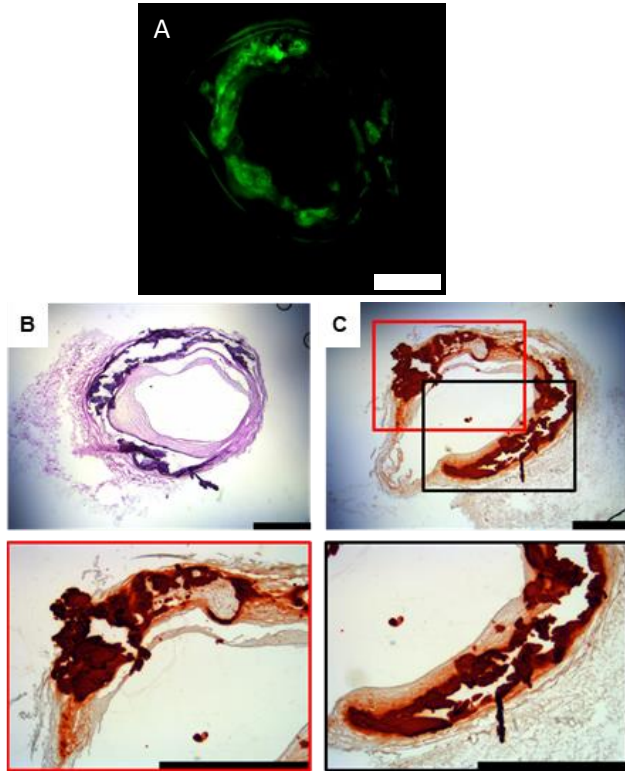


Fig. S7. Fluorescence, top down images of diseased human tibial arteries show A) HA PAMs (green) bind to bulk regions of calcifications. B) H&E staining of diseased human tibial arteries. C) Sections were stained with ARS (2%) to show areas of calcium (red). Insets show microcalcification nodules near the lumen and bulk calcification in the media. Scale bars 1 mm.

Table and Table Legend

Table. S1. Size and zeta potential measurements of HA scrambled PAM via DLS.

Particle	Radius (nm)	PDI	Zeta Potential (mV)
HA scram PAM	8.9 ± 1.1	0.37 ± 0.0	-0.1 ± 0.6