

Supplementary Figures and Legends

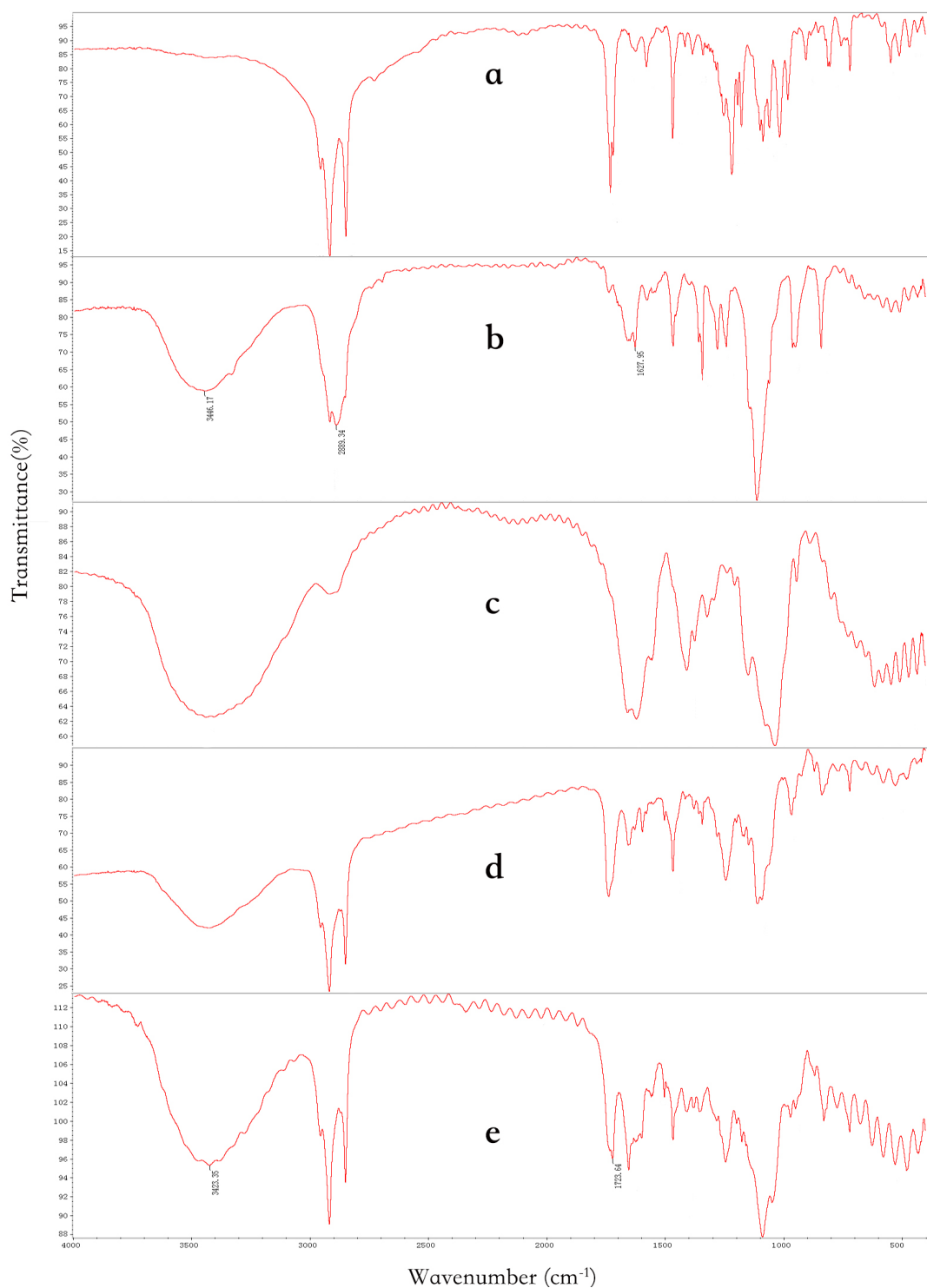


Figure S1. FTIR of DSPE (a), DSPE-CPPs (b), HA (c), CPPs-10-HCPT-NPs (d), HA/CPPs-10-HCPT-NPs (e). Based on curve a, curve b has characteristic peaks at 3446.17 and 1627.96 cm⁻¹ attributed to the stretching vibrations of the amido bond, and the peak at 2889.34 cm⁻¹ is attributed to the stretching vibrations of the CH₂ group in the chemical structure of PEG, which demonstrated the connection between DSPE-PEG-COOH and CPPs. In curve e, the peak at 3423.35 cm⁻¹ is enhanced, and

the peak at 1723.64 cm^{-1} is the characteristic peak of the N-H group of HA. These features suggest that CPPs-10-HCPT-NPs were coated by HA and then formed the final product HA/CPPs-10-HCPT-NPs.

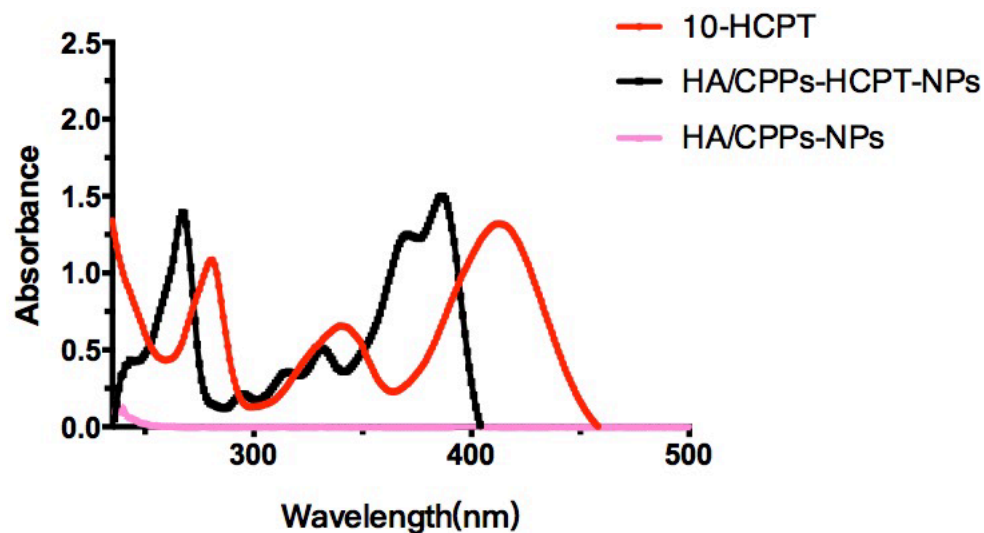


Figure S2. Identification of HA/CPPs-10-HCPT-NPs by UV-vis spectroscopy. Absorbance of 10-HCPT (red), HA/CPPs-10-HCPT-NPs (black) and HA/CPPs-NPs (pink). HA/CPPs-10-HCPT-NPs had the typical UV absorption peaks of 10-HCPT, which were observed at 268, 295 and 371 nm. These results showed that HCPT was loaded successfully.

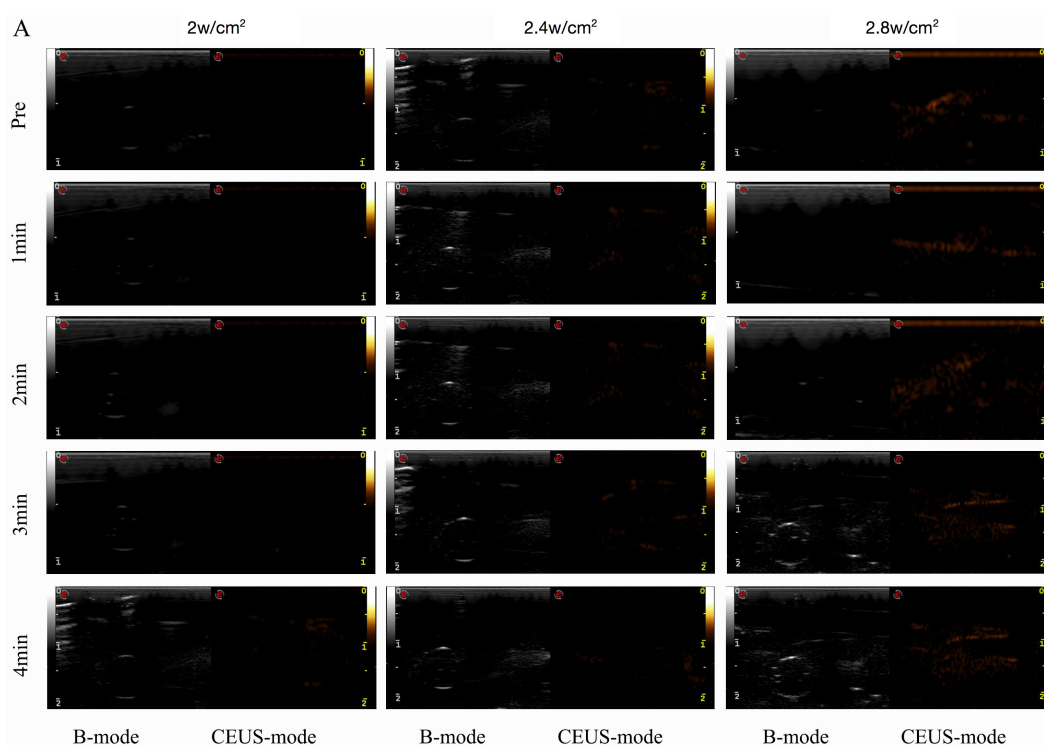


Figure S3. ADV and ultrasound imaging of HA/CPPs-10-HCPT-NPs without encapsulation of PFP in vitro. Time- (before, 1, 2, 3 and 4 min) and acoustic intensity-dependent (2, 2.4 and 2.8 W/cm^2) ADV and ultrasound imaging of NPs triggered by LIFU (left of each ultrasonogram: B-mode, right of each ultrasonogram: CEUS mode). In B-mode and CEUS-mode, a nanoemulsion of NPs in agar gel phantom

showed no echo before or after LIFU irradiation, suggesting that NPs without encapsulation of PFP did not show ADV.

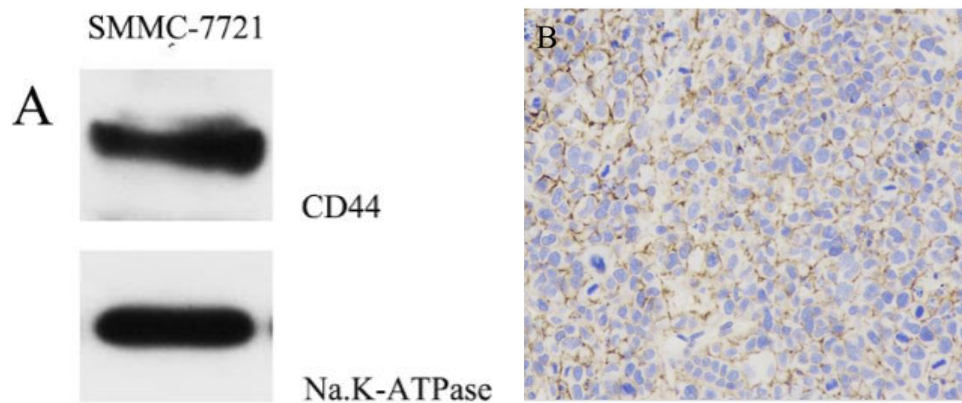


Figure S4. CD44 expression: (A) western blot of SMMC-7721 and (B) immunohistochemical analyses of SMMC-7721 cell tumor xenograft tissue (magnification, $\times 200$). These results suggest that CD44 was overexpressed on SMMC-7721 cell membranes and the cell membranes in HCC tissue.

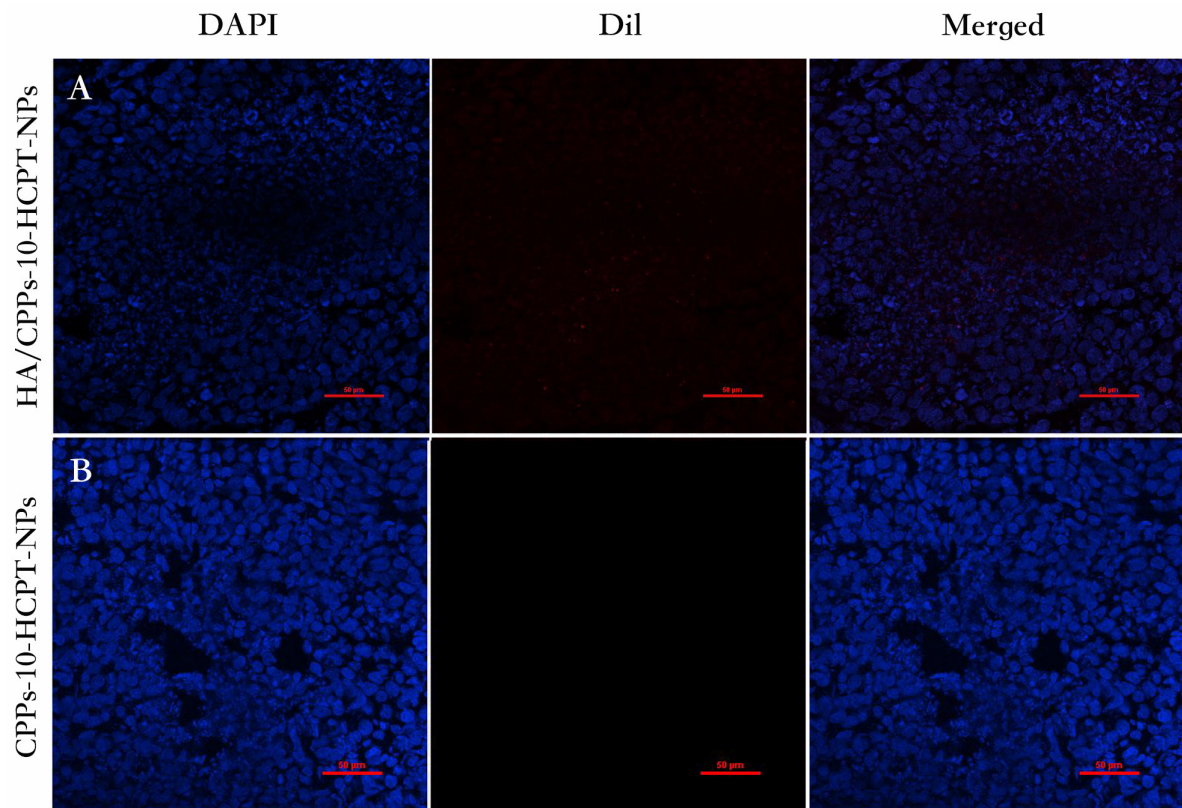


Figure S5. Fluorescence imaging of frozen sections of tumor tissue using CLSM to observe targeting efficiency in the HA/CPPs-10-HCPT-NPs group (A) and CPPs-10-HCPT-NPs group (B). Scale bar = 50 μm .