A highly efficient photothermal branched Au-Ag nanoparticles containing procyanidins for synergistic antibacterial and anti-inflammatory immunotherapy

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1. Calculation of the photothermal conversion efficiency (η)

The specific derivation process of photothermal conversion efficiency was calculated as follows:

$$\eta = \frac{hS(T_{max} - T_0)}{I(1-10^{-A_{808}})} \quad (1)$$

Where T_{max} is the highest temperature of AuAg-PC NRs solution irradiated for 10 min, and T_0 is the highest temperature of the water. I is the laser power (2.5w), and A_{808} is the absorbance of AuAg-PC at 808 nm. hS is directly derived from the formula:

$$\tau_s = \frac{m \times C}{hS} \quad (2)$$

m = 1 g, C = (4.2 J g^{-1}). τ_s is the slope of the fitting line between cooling time t and -$ln\theta$.

$$t = -\tau_s(ln\theta) \quad (3)$$

$$\theta = \frac{T - T_{surr}}{T_{max} - T_{surr}} \quad (4)$$

T is the temperature corresponding to the cooling time, and T_{surr} is the ambient temperature.

2. Supplementary table

Table S1: EE (%) and DLC (%) for different NPs

Materials	DLC(%)	EE(%)
AuAg-PC I	6.667 ± 0.5819	65.23 ± 1.65
AuAg-PC II	3.2 ± 0.4163	75.47 ± 1.541
AuAg-PC III	1.35 ± 0.3753	58.23 ± 1.198

Table S2: The antimicrobial activity of different treatment

Materials	MIC(μg ml^{-1})	MBC(μg ml^{-1})
AuAg-PC I/NIR	150	300
AuAg-PC II/NIR	75	150
AuAg-PC III/NIR	50	100

3. Supplementary figures

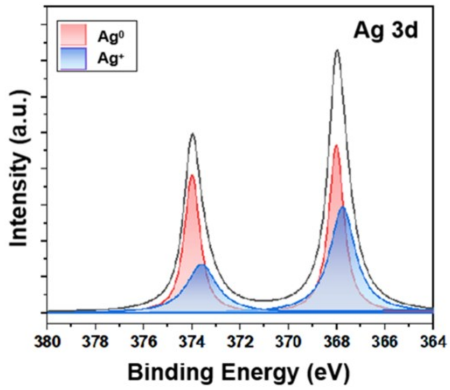

Fig. S1. XPS spectra of the Ag3d region of the AuAg-PC NPs.

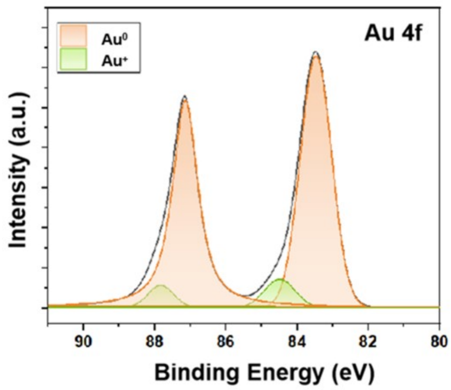

Fig. S2. XPS spectra of the Au4f region of the AuAg-PC NPs.

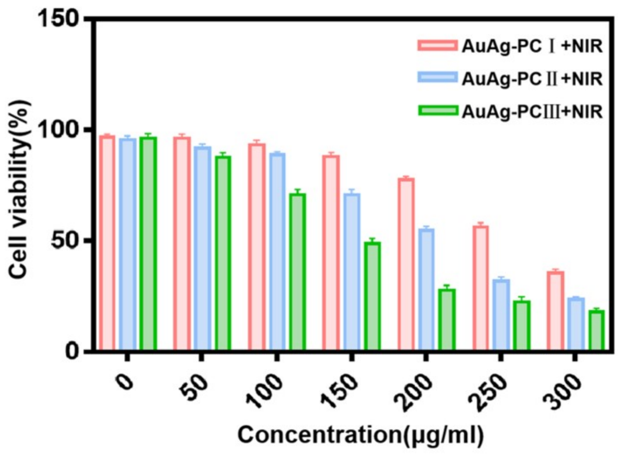

Fig. S3. Cytotoxicity of AuAg-PC NPs under NIR irradiation.

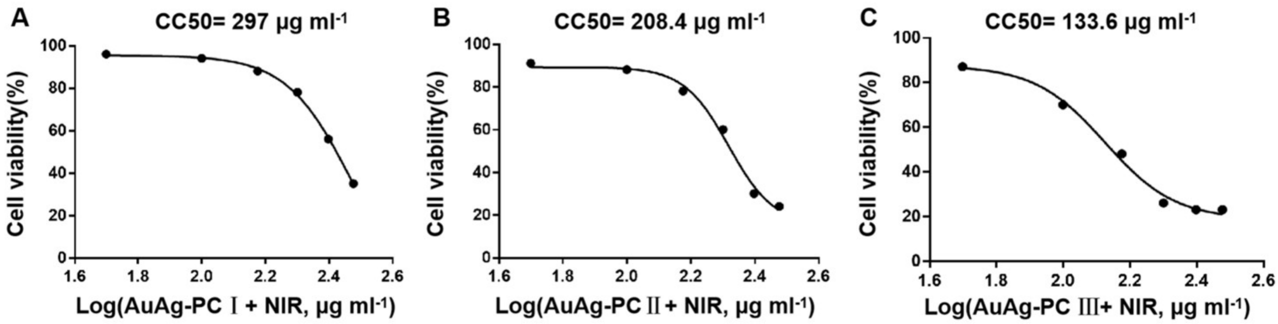

Fig. S4. Cytotoxic effect of (A) AuAg-PC I (B) AuAg-PC II and (C) AuAg-PC III under NIR irradiation.

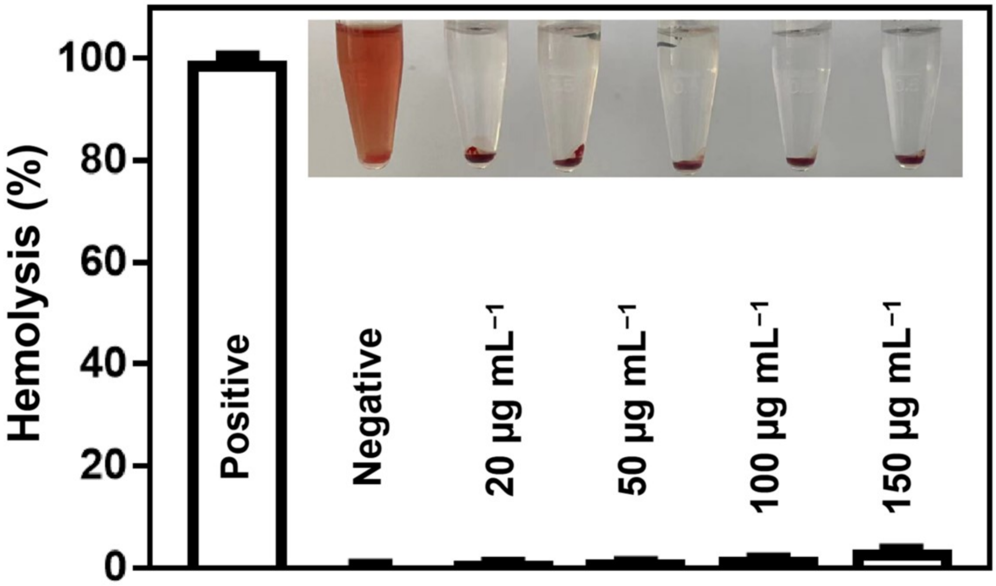

Fig. S5. Hemolysis ratios of fresh RBCs in the presence of AuAg-PC II.

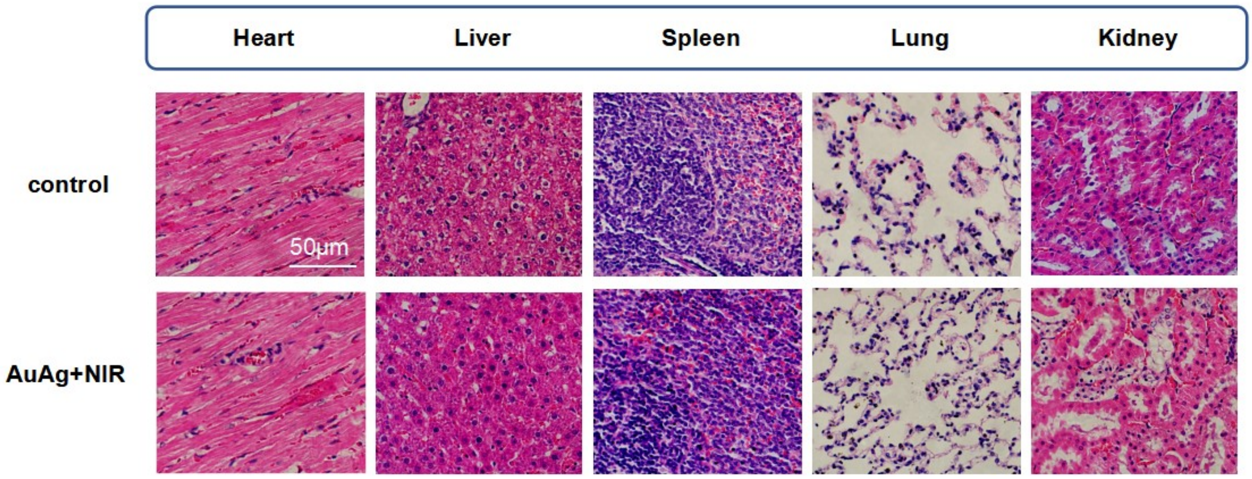

Fig. S6. HE staining sections of main organs.