Supplementary Material

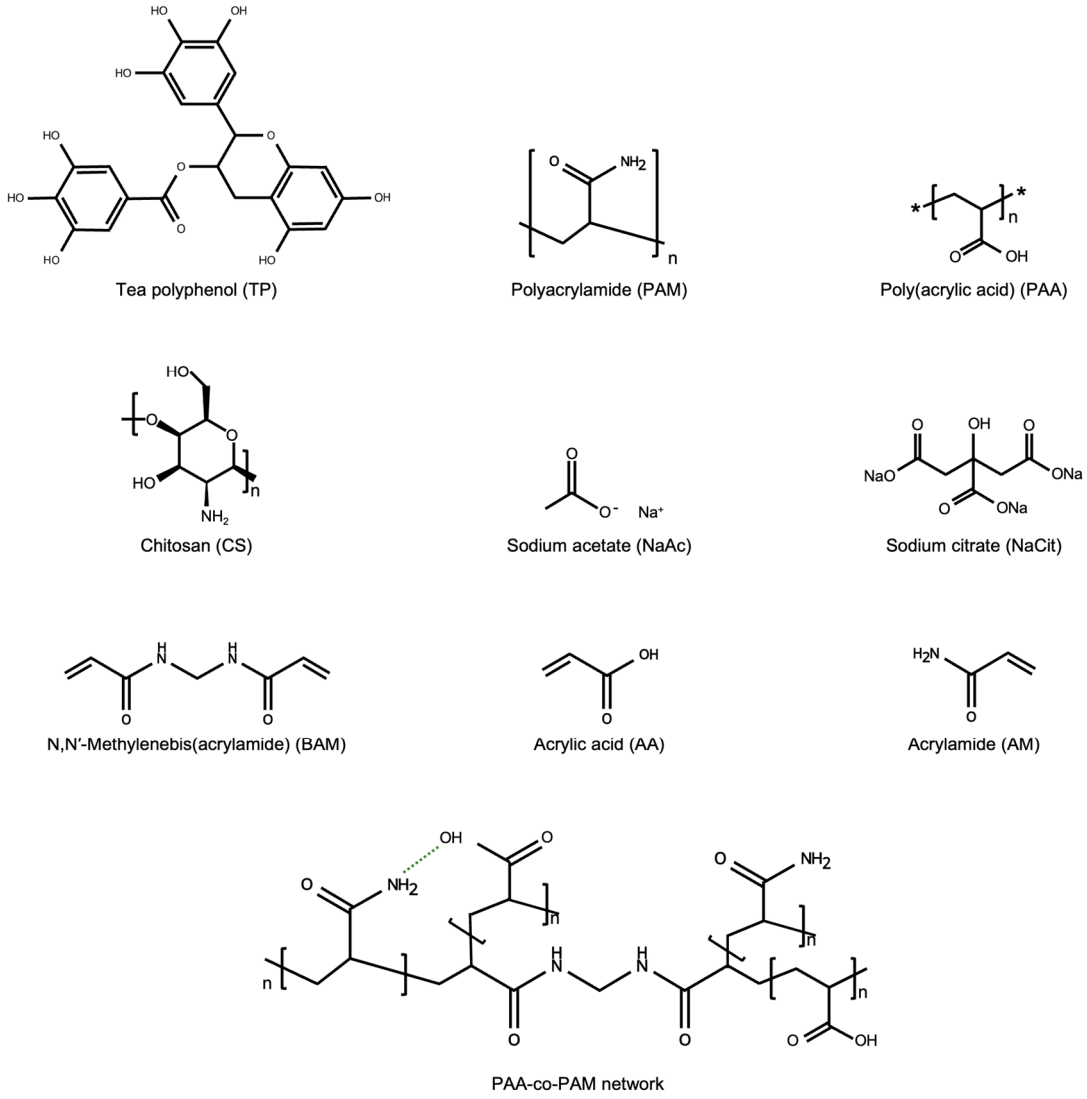


Figure S1. Chemical structural formulas of key components of PPTY-AP hydrogel.

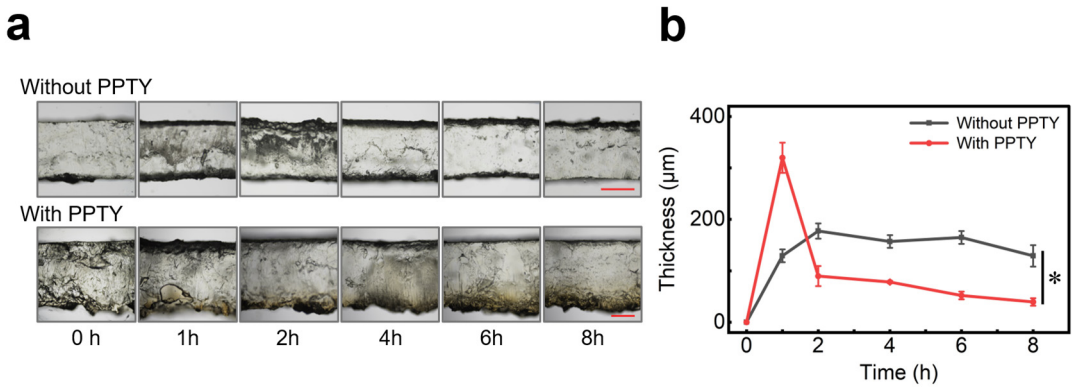


Figure S2. The effect of the PPTY layer on the thickness of the AP layer. (a) Images of AP layer hydrogel with and without PPTY layer, scale bar = 1 mm. (b) Quantitative representation of the thickness of armer layer.

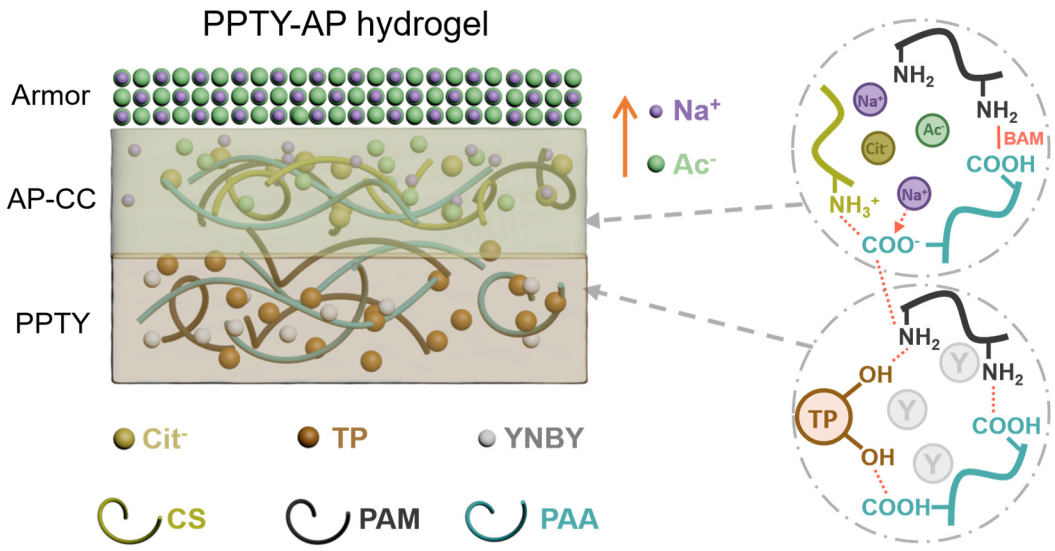


Figure S3. Schematic illustration of component interactions in the PPTY-AP hydrogel.

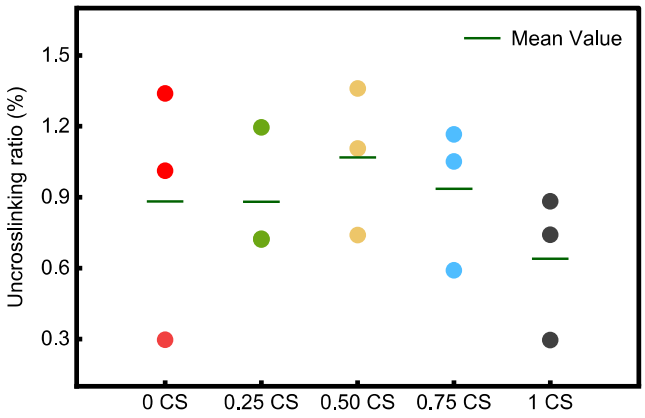


Figure S4. The gelation stability of AP hydrogel with different concentrations of CS.

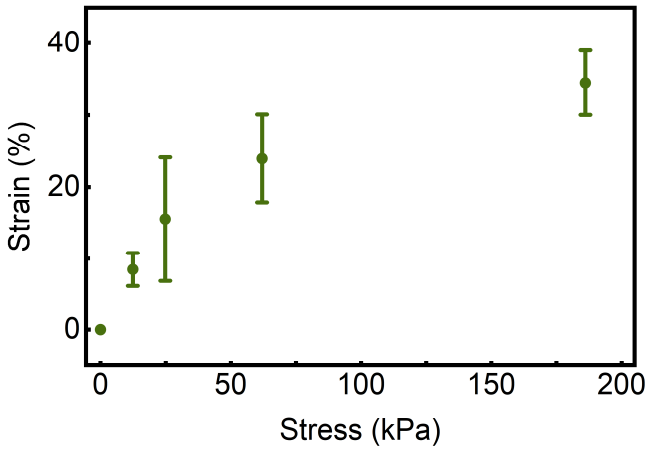


Figure S5. The compressive stress-strain relationship of PPTY-AP hydrogel.

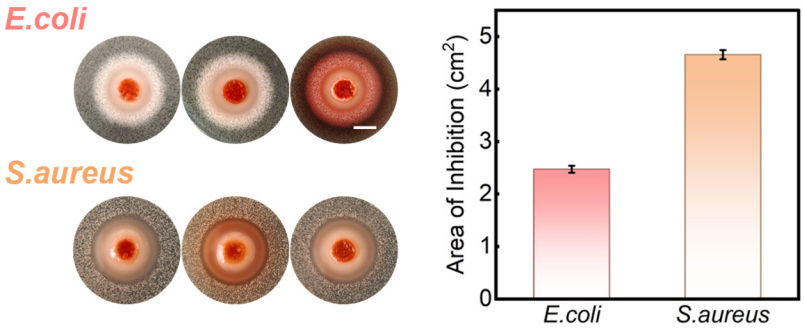


Figure S6. The antibacterial activity of hydrogel against *Escherichia coli* and *Staphylococcus aureus*. Scale bar = 1 cm.