Supplementary Information (SI) for Journal of Materials Chemistry B. This journal is © The Royal Society of Chemistry 2025

Spatiotemporally modulated polyphenol-protein coating for accelerated healing

of chronic wounds

Linhua Li<sup>1#</sup>, Qingyin Li<sup>2#</sup>, Chunle Zhang<sup>1</sup>, Zhengjiang Cao<sup>1</sup>, Chang Liu<sup>1</sup>, Rifang Luo<sup>4</sup>, Yunbing Wang<sup>4</sup>, Xiaoxi Zeng<sup>3\*</sup>, Ping Fu<sup>1\*</sup>

<sup>1</sup> Department of Nephrology, Institute of Kidney Diseases, West China Hospital of Sichuan University, Chengdu 610041, China.

Sichaun Chiversity, Chengaa 010011, China.

<sup>2</sup> Department of Nephrology, Institute of Kidney Diseases, Frontiers Science Center for Disease-related Molecular Network, West China Hospital, Sichuan University, Chengdu 610041, Sichuan, China

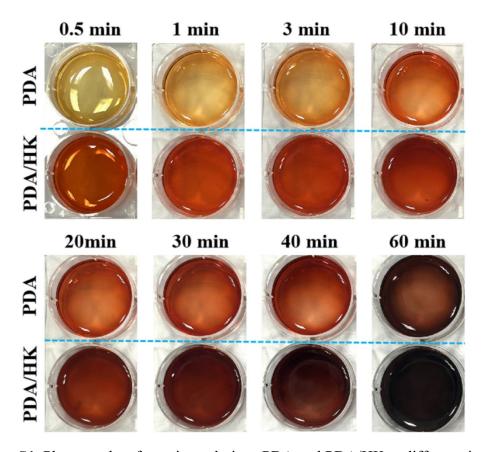
8

<sup>3</sup> Department of Nephrology and West China Biomedical Big Data Center, West China Hospital of Sichuan University,

<sup>4</sup> National Engineering Research Center for Biomaterials, Sichuan University, Chengdu, 610064, China.

E-mail: zengxiaoxi@wchscu.cn; fupinghx@scu.edu.cn

## 2. Supporting Figures



**Figure. S1.** Photographs of reaction solutions PDA and PDA/HK at different times.

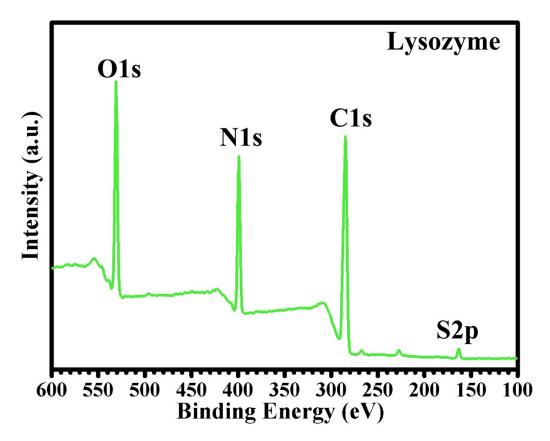


Figure. S2. XPS full spectrum of lysozyme.

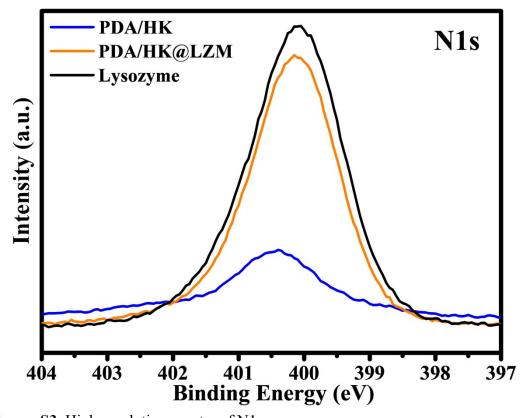


Figure. S3. High-resolution spectra of N1s.

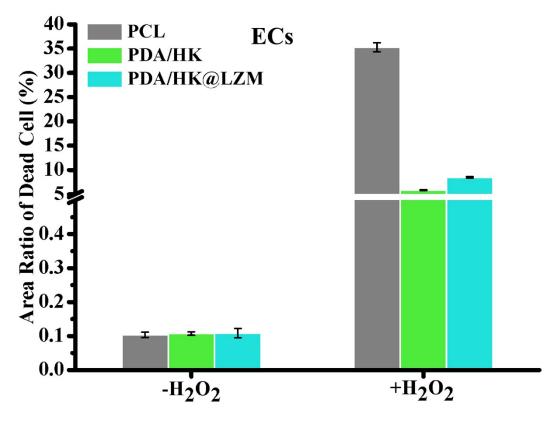
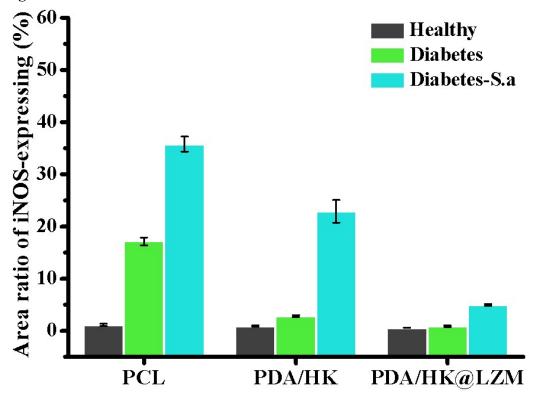
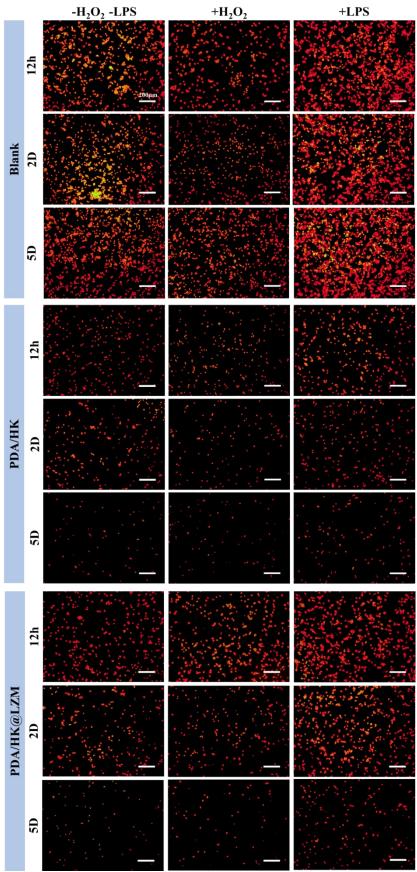


Figure. S4. Area ratio of dead cells after incubation of ECs with different extracts.



**Figure. S5.** The ratio of areas expressing iNOS protein in wound tissues treated by different dressings.



**Figure S6.** Macrophage morphology after exposure to extracts (12 h, 2 d, 5 d) from different surfaces under various stimuli.