Supporting Information

Two-Electron Oxidized Polyphenol Chemistry-Inspired Superhydrophilic Drug-carrying Coatings for the Construction of Multifunctional Nasolacrimal Duct Stents

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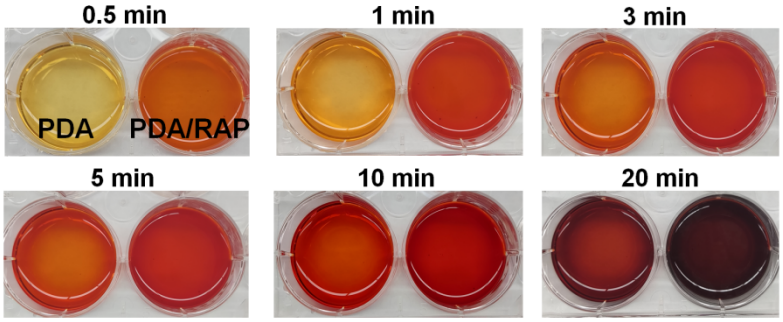

Fig. S1. Solution changes during coating preparation.

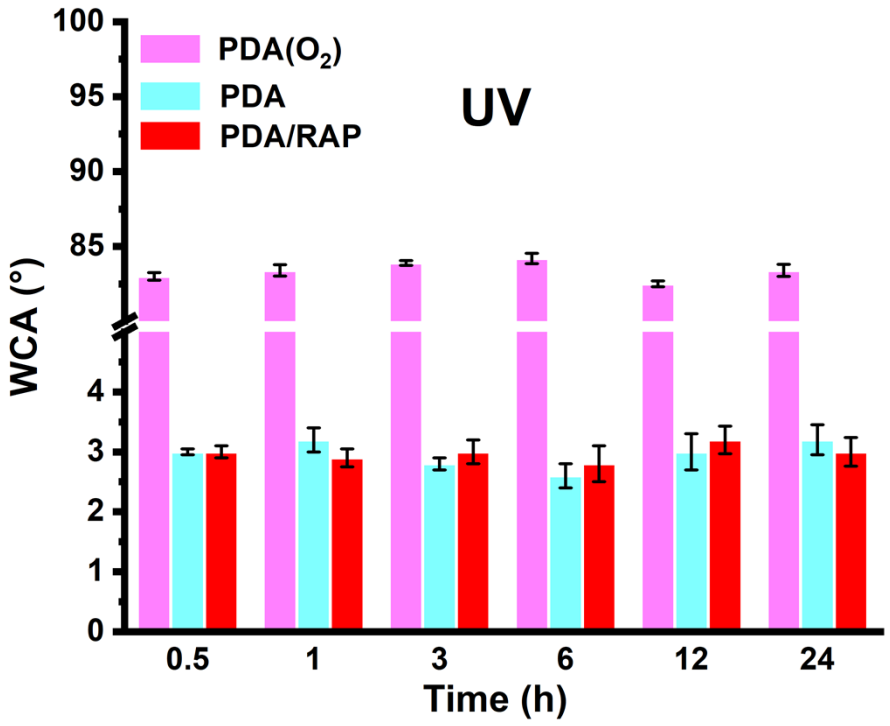

Fig. S2. Static WCA of samples after exposure to UV for different times.

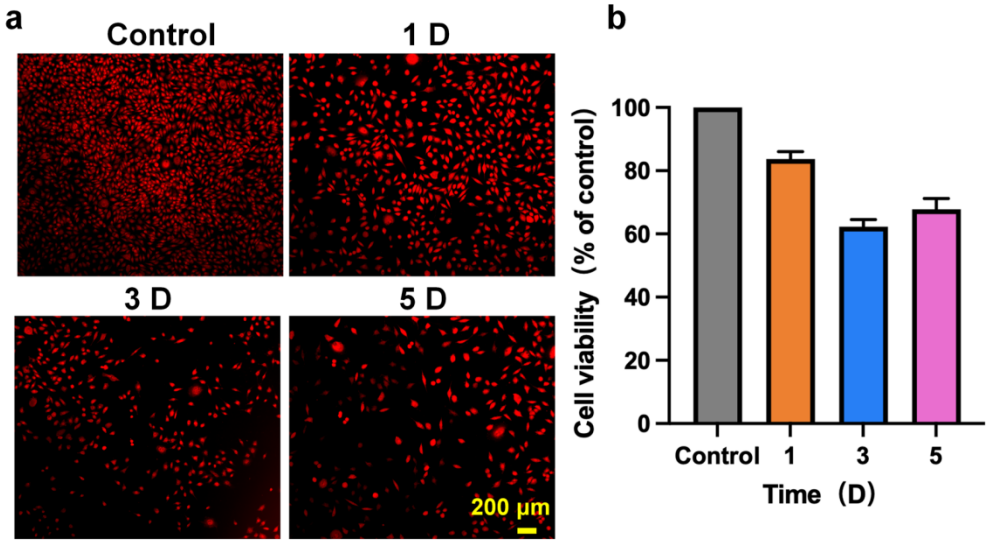

Fig. S3. (a) Fluorescence staining (Scale Bar 200 μm). (b) and cell viability of L929

cells co-cultured with coating release solution at different time points.

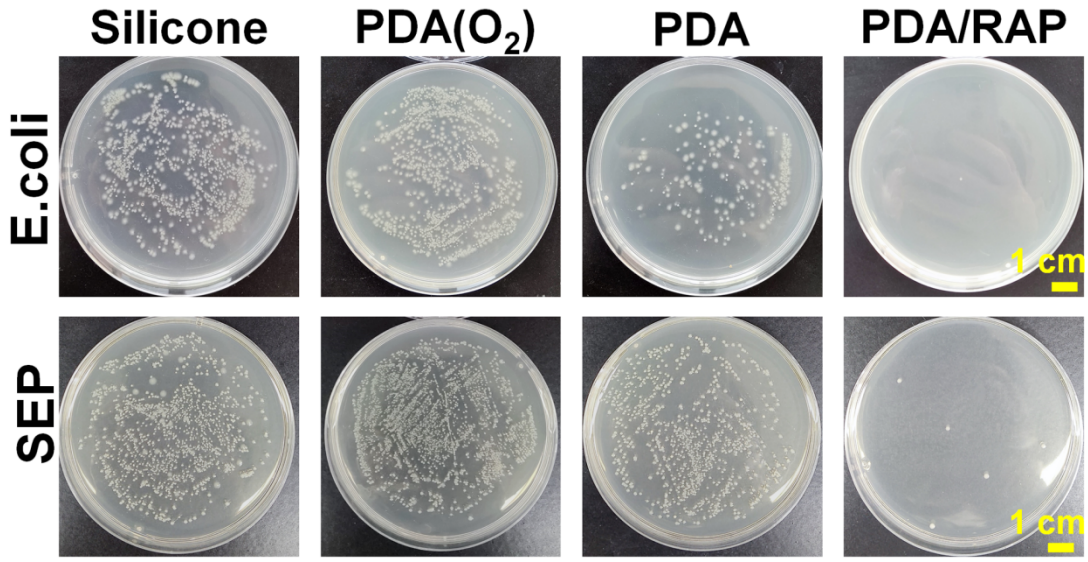

Fig. S4. Bacterial smear photograph of E. coli and S. epidermidis on the fresh sample (Scale Bar 1 cm).

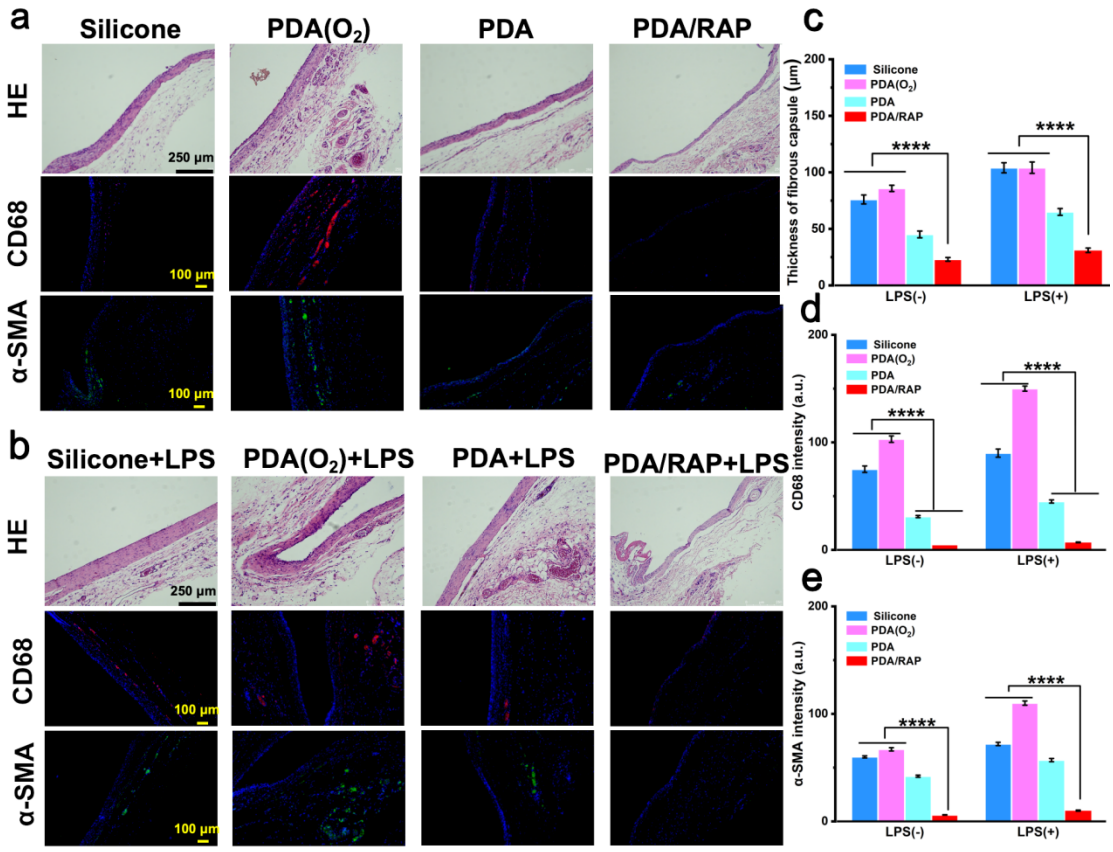

Fig. S5. In vivo SD rats implantation experiments for 15 days. H&E, CD68 antibody, α-SMA antibody staining for 15 days after subcutaneous implantation without (a) and with (b) LPS stimulation (Scale Bar 250/100 μm). (c) Thickness of the fibrous capsules of different samples. Immunofluorescence intensity of CD68 (d) and α-SMA (e) of the capsules of different samples.

In Fig. S5a and 5b, H.E., CD68 and α-SMA staining were used respectively to show the thickness of fibrosac and the degree of inflammatory cell infiltration 15 days after subcutaneous embedding in each group. Compared with silica gel group and PDA (O2) group, the thickness of fibrous sac and the degree of inflammatory cell aggregation and infiltration in PDA and PDA/RAP group were significantly reduced. Even when the stimulation was simulated with LPS, the trend in each group was consistent with that without LPS, indicating that the PDA/RAP coating has excellent anti-inflammatory properties (Fig. S5c). By CD68 and α-SMA immunofluorescence staining and semi-quantitative data analysis (Fig. S5d-e), it was found that the degree of inflammatory infiltration and fibrosis of silica gel and PDA (O2) was significantly stronger than that of PDA and PDA/RAP, which further proved that PDA/RAP had good anti-inflammatory and anti-fibrosac proliferation biological properties.

Elements / samples	C(%)	N(%)	O(%)
PDA(O_2)	63.81	6.4	29.79
PDA	72.02	8.78	19.2
PDA/RAP	70.54	9.28	20.18

Table1: Elemental composite ratio of PDA(O_2), PDA, PDA/RAP coatings.