Poly-γ-glutamic Acid/Melanin-like Hydrogel as Efficient UVA Protection and Antioxidative Enhancers for Preventing and Treating UVA-Induced Skin Damage

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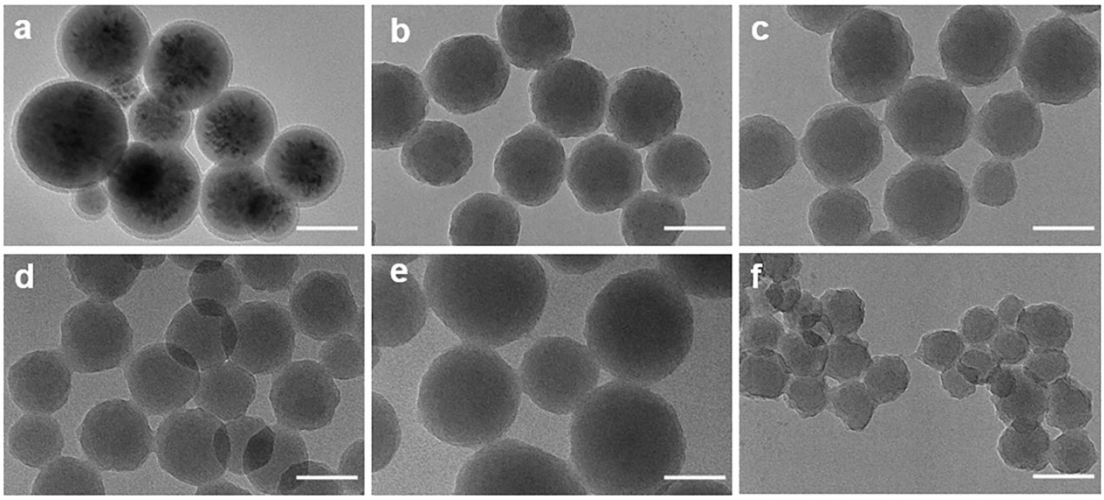

Figure S1. TEM images of a) PDA NPs, b) PDA-L-1, c) PDA-L-2, d) PDA-L-4, e) PDA-L-5and f) PDA-L-6. Scale bars, 100 nm.

Table S1. PDA-L-i (i = 1-6) with different nitrogen contents and doped L-lysine contents.

Entry	Material	N/%	L-lysine/%
1	PDA	8.08	0
2	PDA-L-1	8.13	0.45
3	PDA-L-2	8.33	2.3
4	PDA-L-3	8.44	3.24
5	PDA-L-4	8.62	4.86
6	PDA-L-5	8.9	7.38
7	PDA-L-6	9.24	10.25

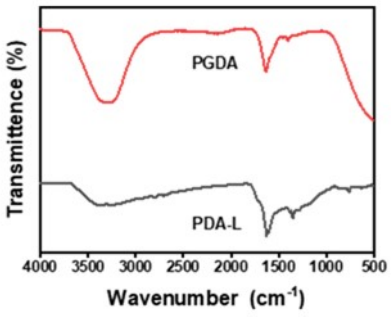

Figure S2. IR spectra of PDA-L and PGDA.

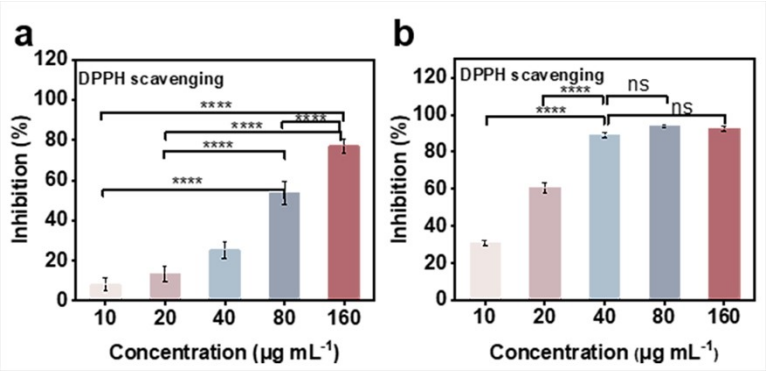

Figure S3. DPPH free-radical scavenging ability of different concentrations of a) PDA and b) PDA-L. Data are shown as mean ± s.d. (n = 3), *P < 0.05, **P < 0.01, ***P < 0.001, ****P < 0.0001, ns = not significant.

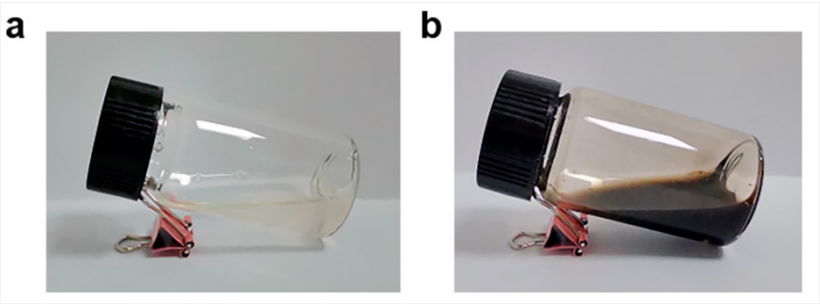

Figure S4. Photographs of a) the hydrogel matrix SPE and b) the sunscreen hydrogel PGDA.

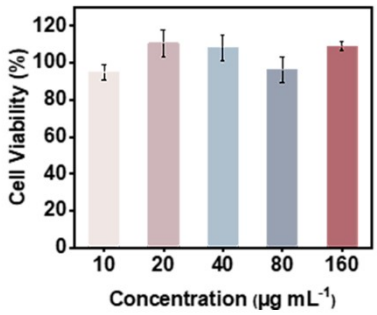

Figure S5. Effect of PGDA on the cell viability of L929 cell line at increasing concentration following 24 h of incubation.

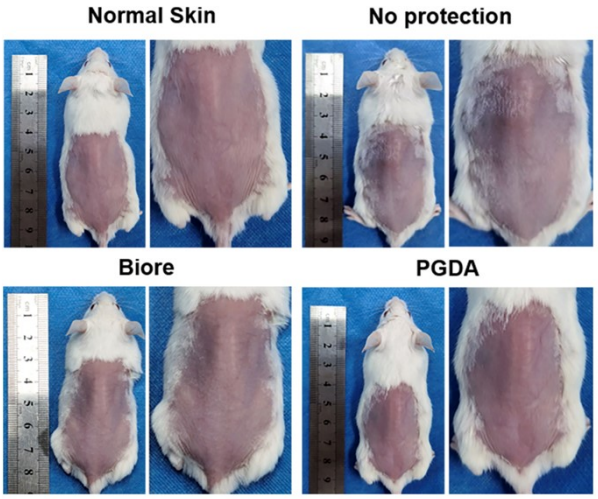

Figure S6. Photographs of the dorsal skin of mice in different groups after UV irradiation.

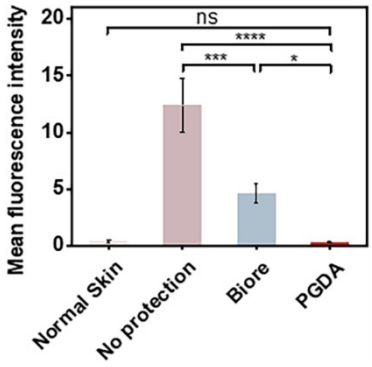

Figure S7. The average fluorescence intensity of skin tissue damaged by different treatment methods was quantitatively analyzed. Data are shown as mean ± s.d. (n = 3), *P < 0.05, **P < 0.01, ***P < 0.001, ****P < 0.0001, ns = not significant.