

Supplementary Information

Genipin-Crosslinked CeO₂-Incorporated Janus Patch for Oral Ulcer Treatment

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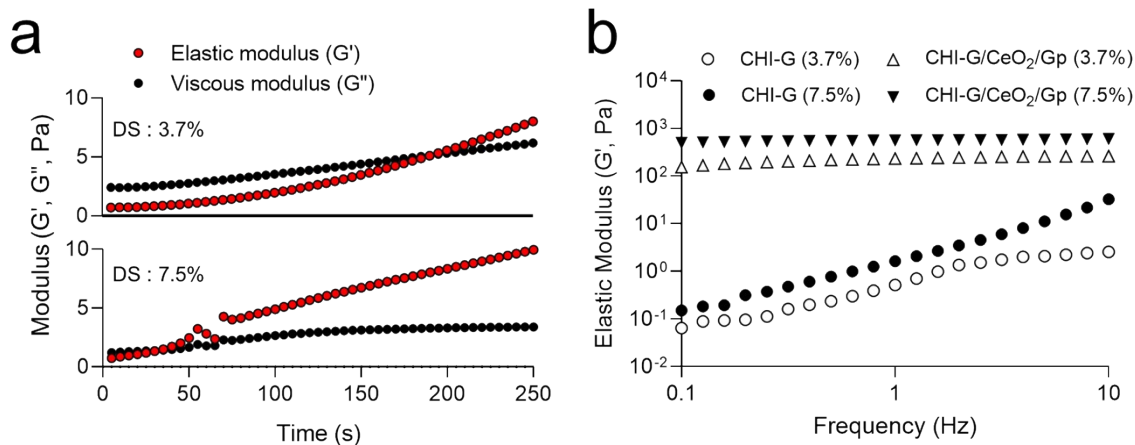


Figure S1. (a) Gelation kinetics of CHI-G/CeO₂/Gp hydrogels prepared from CHI-G with DS (degree of substitution) of 3.7 and 7.5%. (b) Elastic modulus (G') changes of CHI-G (DS=3.7% and 7.5%) solutions and CHI-G/CeO₂/Gp hydrogels prepared from those CHI-G as a function of frequency.

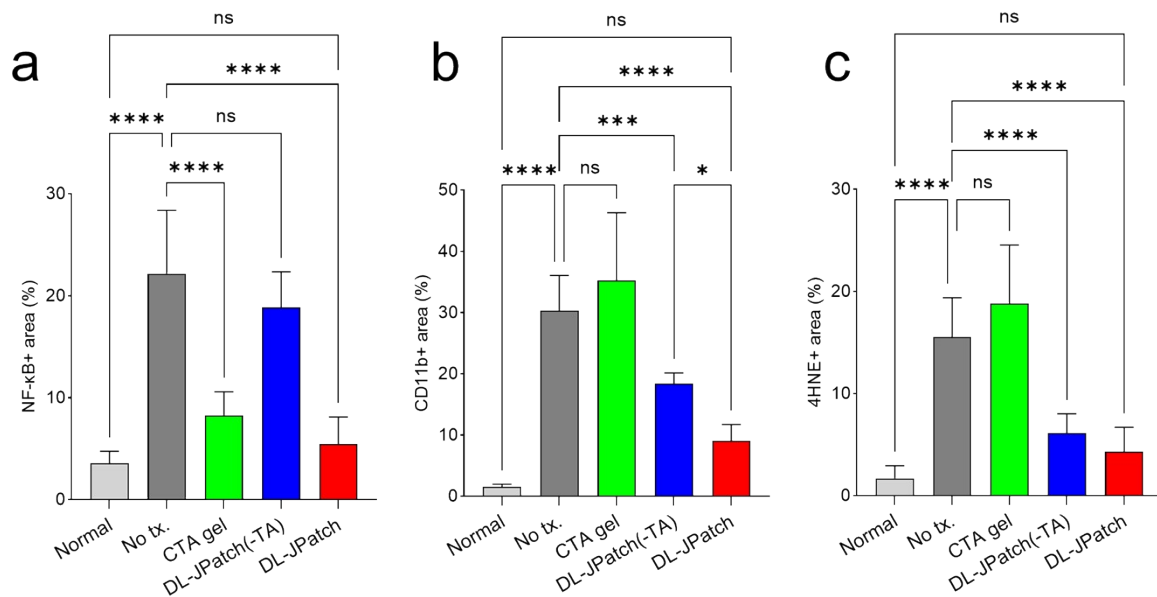


Figure S2. (a) Quantified analysis data of NF-κB immunohistochemical staining. ($n = 8-13$, ns: no significance, **** $p < 0.0001$, one-way ANOVA test). (b) Quantified analysis data of CD11b immunohistochemical staining. ($n = 7-12$, ns: no significance, * $p < 0.05$, *** $p < 0.001$, **** $p < 0.0001$, one-way ANOVA test). (c) Quantified analysis data of 4HNE immunohistochemical staining. ($n = 9-14$, ns: no significance, **** $p < 0.0001$, one-way ANOVA test) All data are means \pm s.d.

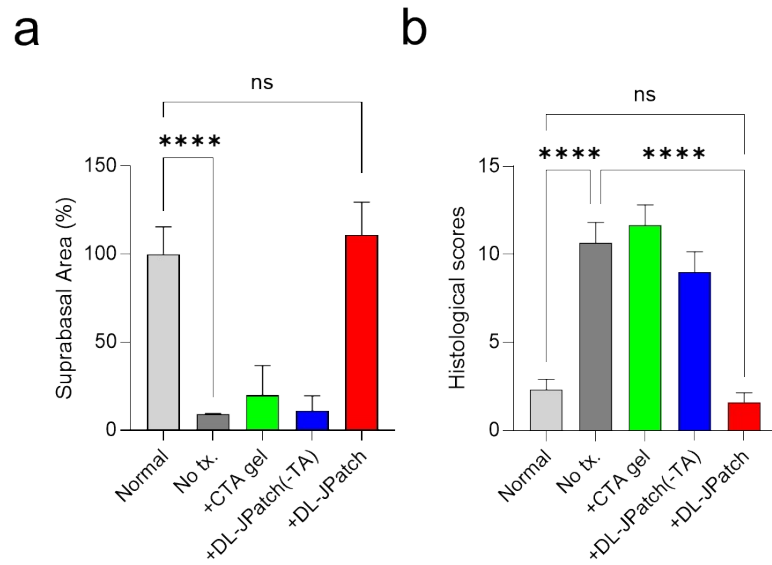


Figure S3. (a) Quantified analysis data of CK13 immunohistochemical staining. ($n = 3-5$, ns: no significance, **** $p < 0.0001$, one-way ANOVA test). **(b)** Analysis of histological scores ($n = 3-5$, ns: no significance, **** $p < 0.0001$, one-way ANOVA test). All data are means \pm s.d.

Table S1. Histological analysis of oral ulcers.

Feature graded	Grade	Extent (%)
Mucosal integrity	0	81 ~ 100
	1	61 ~ 80
	2	41 ~ 60
	3	21 ~ 40
	4	0 ~ 20
Inflammatory infiltration	0	0 ~ 8
	1	9 ~ 16
	2	17 ~ 24
	3	25 ~ 32
	4	33 ~ 40
Inflammatory signaling	0	25 ~ 32
	1	19 ~ 24
	2	13 ~ 18
	3	7 ~ 12
	4	0 ~ 6
Lipid peroxidation	0	0 ~ 5
	1	6 ~ 10
	2	11 ~ 15
	3	16 ~ 20
	4	21 ~ 26

Table S2. Results of ICP-MS analysis detecting Ce in major organs.

Control	Ce	DL-Jpatch	Ce
Spleen	nd	Spleen	nd
Liver	nd	Liver	nd
Kidney	nd	Kidney	nd
Heart	nd	Heart	nd

*nd = non detectable (≤ 0.1 ppb), n=3

*All samples were analyzed three times and averaged.