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Supporting Information

Modulation of gut barrier functions in ulcerative colitis by hyaluronic acid system

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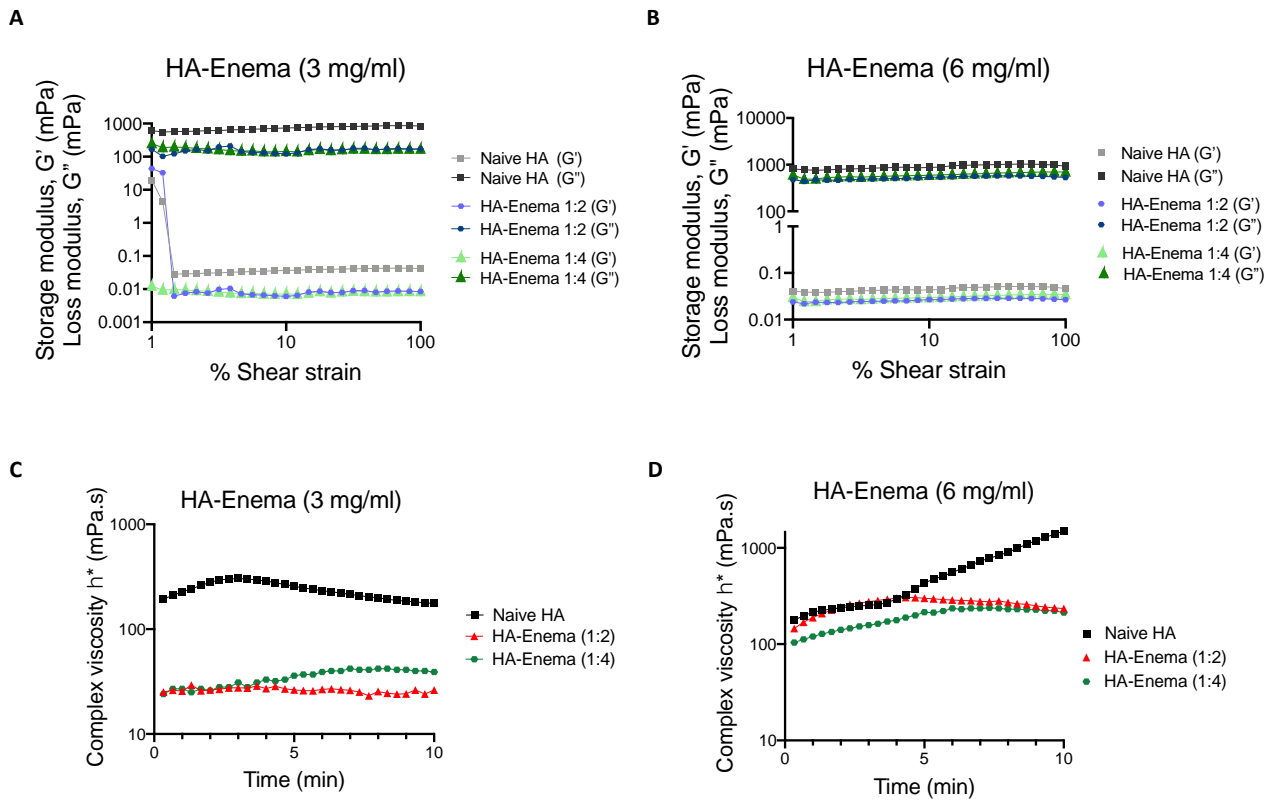
Figure. S1. Rheological measurements of Naïve HA and HA- enema suspension system.

(A, B) Storage modulus (G'), loss modulus (G'') and complex viscosity ($\eta*$) values for 3 mg/mL formulations of Naïve HA, HA-enema (1:2) and HA-suspension (1:4) solutions over a percent shear strain range of 1-100% and time sweep respectively. (C, D) Storage modulus (G'), loss modulus (G'') and complex viscosity ($\eta*$) values for 6 mg/mL formulations of Naïve HA, HA-enema (1:2) and HA-enema (1:4) solutions over a percent shear strain range of 1-100% and time sweep respectively.
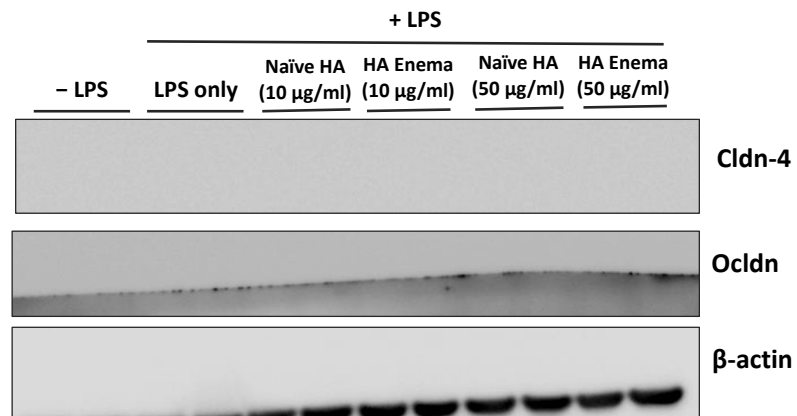
Figure S2. Effect of Naïve HA and HA-enema treatment on Caco-2 cells. Monolayer Caco-2 cells were treated with Naïve HA and HA-enema (10, 50 µg/mL) for 24 hrs followed by treatment with LPS (50 ng/ml) for two hrs. Naïve HA and HA-enema moderately induced protein expression of Cldn4, Ocln in Caco-2 cells was determined by immunoblots.
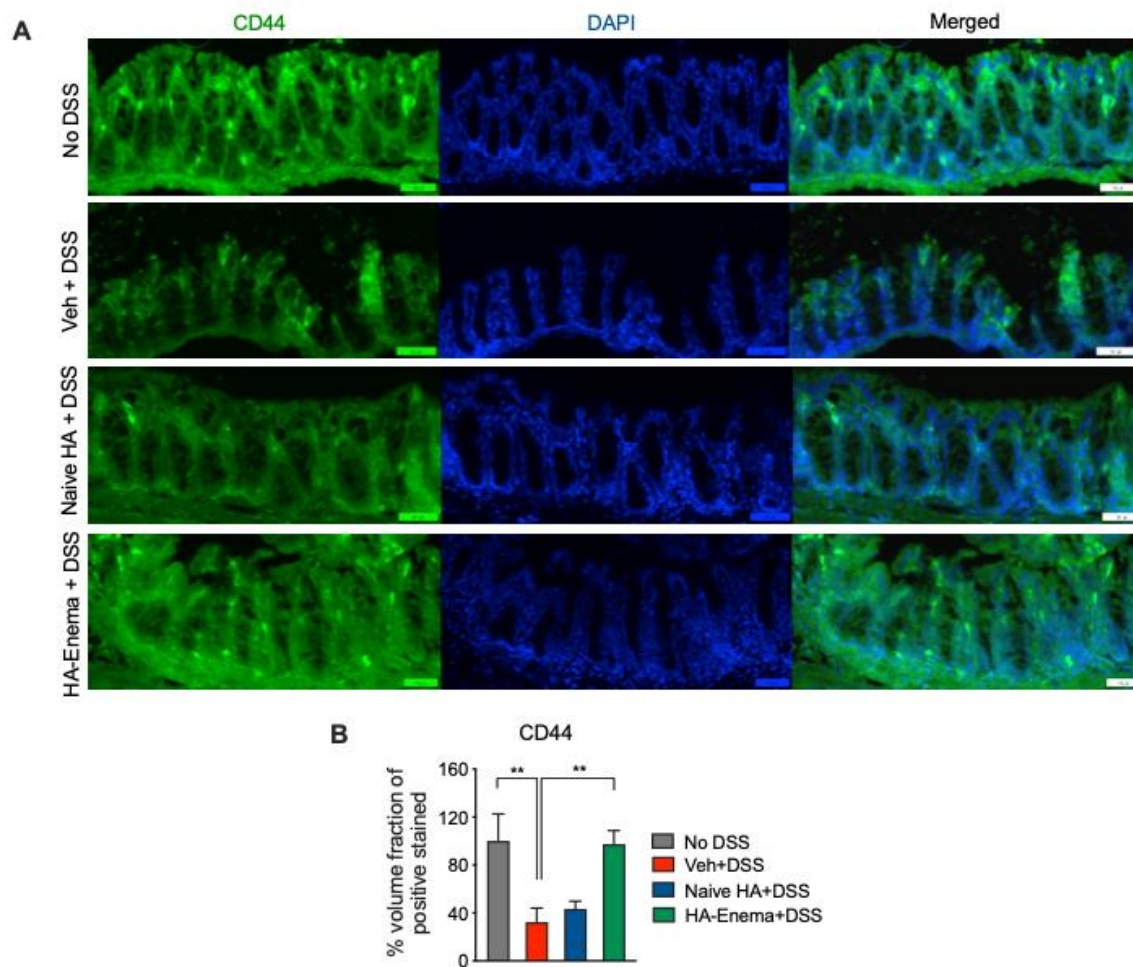
Figure S3. Proteomic changes (surface receptor) underlying intestinal epithelial layer following colitis induction and HA treatments. Representative immunofluorescence images showing presence of epithelial surface receptor CD44 at the colitis epithelial wall in HA-treated groups compared to vehicle (PBS) control group (A) and % volume fraction of the staining (B). Statistical analysis was performed using GraphPad Prism software by one-way ANOVA with Dunnett's multiple comparisons test, data were expressed as the mean ± SEM. *$p < 0.05$. Scale bar 50 μm.
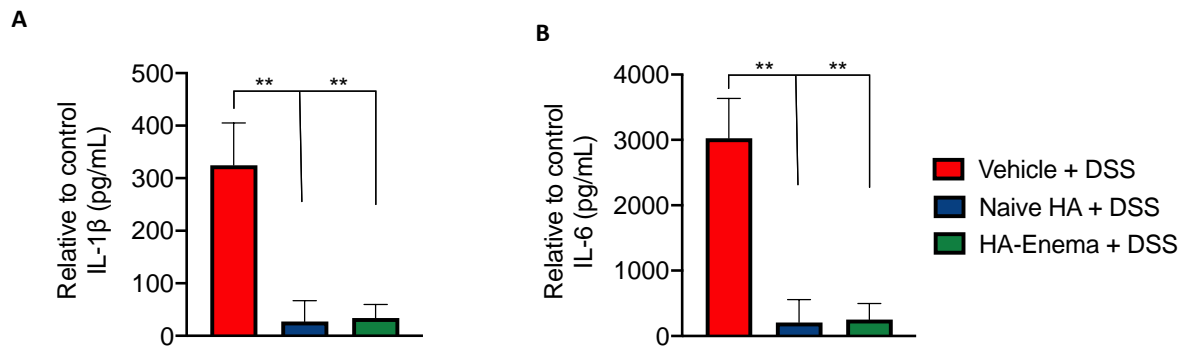
Figure S4. Proteomic changes (inflammatory markers) underlying intestinal epithelial layer following colitis induction and HA treatments. (A, B) Levels of IL-1β and IL-6 from the protein lysate of DSS colitis tissue after Naïve NA and HA-enema treatment. Statistical analysis was performed using GraphPad Prism software by one-way ANOVA with Dunnett's multiple comparisons test, data were expressed as the mean ± SEM. **p < 0.01.