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Title: Effect of Toll-like receptor 3 agonist Poly I:C on intestinal mucosa and epithelial barrier function in mouse models of Acute Colitis

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1 What did this study explore?

Present study explored the potential effects of Poly I:C on intestinal mucosa and epithelial barrier function in dextran sulfate sodium (DSS)-induced acute colitis.

2 How did the authors perform all experiments?

Thirty C57BL/6 mice were randomly divided into 3 groups: control group, model group, and Poly I:C groups. The acute colitis was induced by adding 2% (w/v) DSS in drinking water for 7 days. Poly I:C was administrated subcutaneously (20 µg/mouse) 2 h prior to DSS induction in mice of Poly I:C group. Severity of colitis was evaluated by disease activity index, body weight loss, colon length, histology, myeloperoxidase (MPO) activity, as well as the production of proinflammatory cytokines, including tumor necrosis factor- α (TNF- α), interleukin 17 (IL-17) and interferon- γ (IFN- γ). The intestinal permeability was analyzed by fluorescein isothiocyanate FITC-labeled dextran (FITC-D) method. Ultrastructural features of the colon tissue were observed under electron microscopy. Expressions of tight junction (TJ) proteins, including zo-1, occludin, and claudin-1, were detected measured by immunohistochemistry/ immunofluorescence, Western blot and real-time quantitative polymerase chain reaction (RT-qPCR).

3 How did the authors process all experimental data?

All the experimental data were assessed by investigators blinded to the group assignment. Data were expressed as mean \pm standard deviation (mean \pm SD) and analyzed with SPSS 13.0

software (SPSS, Inc., Chicago, IL). Comparison between the groups was done by Student's t-test. Comparison among the groups was conducted by one-way ANOVA analysis followed by LSD post-hoc test.

4 How did the authors deal with the pre-study hypothesis?

The results of this study better clarify the pre-study hypothesis, demonstrating the protective effect of TLR3 agonist Poly I:C on mucosal injury and epithelial barrier disruption in mouse models of DSS-induced Acute Colitis.

5 What are the novel findings of this study?

The findings of our study suggested that Poly I:C may protect against DSS-induced colitis through maintaining integrity of epithelial barrier and regulating the innate immune responses, which may shed light on the therapeutic potential of Poly I:C in human colitis.

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