HUMAN DENTAL-PULP MESENCHYMAL STEM CELLS AMELIORATE TNBS-INDUCED INTESTINAL FIBROSIS VIA BALANCING PRO-AND ANTI-FIBROTIC SIGNALING PATHWAYS

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Human dental-pulp mesenchymal stem cells ameliorated intestinal fibrosis in a mouse model of Crohn's disease by reducing fibrotic markers and proinflammatory cytokines while modulating TGF-β and IFN-γ signaling pathways.

KEY POINTS

- Both human dental-pulp MSC and umbilical cord MSC reduced body weight loss, colon shortening, disease activity index, and macroscopic fibrosis scores in TNBS-induced chronic intestinal fibrosis mice, with dental-pulp MSC showing greater statistical significance.
- Human dental-pulp MSC treatment decreased expression of pro-fibrotic markers Fibronectin, Collagen I, and α-SMA, and significantly reduced proinflammatory cytokines IL-1β, IL-6, and TNF-α.
- Transcriptome analysis revealed that human dental-pulp MSC inhibited the TGF-β signaling pathway and activated the IFN-γ signaling pathway, suggesting a mechanism of balancing pro-fibrotic and anti-fibrotic pathways.
- This preclinical mouse study supports human dental-pulp mesenchymal stem cells as a potential novel therapeutic approach for intestinal fibrosis in Crohn's disease, relevant to researchers investigating stem cell therapies for inflammatory bowel disease complications.

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