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Summary

PROTEIN FINGERPRINT BIOMARKERS OF COLLAGEN REMODELING CAN EVALUATE FIBROGENESIS IN AN IN VITRO COLONIC SCAR-IN-A-JAR MODEL

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A prolonged in vitro scar-in-a-jar model using human colonic fibroblasts demonstrates that protein fingerprint biomarkers PRO-C1, PRO-C3, and PRO-C6 can objectively quantify TGF-β-induced collagen formation and its inhibition by ALK5 inhibitors.

KEY POINTS

- TGF-β stimulation significantly increased type I, III, and VI collagen formation at days 4, 8, 12, and 15 compared to DMSO control, as measured by PRO-C1, PRO-C3, and PRO-C6 biomarkers in supernatants.
- Co-stimulation with TGF-β1 and ALK5 inhibitor from day 4 onward significantly reduced collagen formation at days 8, 12, and 15, with the greatest reductions observed at 1.0 or 10.0 μM concentrations.
- No significant difference in metabolic activity was observed between TGF-β1 and the highest ALK5 inhibitor concentration (10.0 μM), indicating effects were specific to fibrogenesis rather than general cytotoxicity.
- The model combined with protein fingerprint biomarkers may serve as a screening tool to evaluate drug targets for intestinal fibrosis, addressing an unmet need given no approved treatments currently exist for this IBD complication.

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