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Summary

NONINVASIVE TRANSCUTANEOUS AURICULAR VAGUS NERVE STIMULATION MODULATES PRO-APOPTOTIC AND PRO-SURVIVAL MOLECULES AND ANTI-INFLAMMATORY CYTOKINES IN A PRECLINICAL MODEL OF ULCERATIVE COLITIS

Jean-Eric Ghia

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Noninvasive transcutaneous auricular vagus nerve stimulation (NitaVNS) reduced disease severity and modulated apoptotic and anti-inflammatory markers in a mouse model of dextran sodium sulfate-induced ulcerative colitis.

KEY POINTS

- NitaVNS significantly reduced disease activity index, rectal bleeding, weight loss, colon length decrease, and macroscopic and histological scores including mucosal damage, crypt loss, and immune cell infiltration in colitic mice.
- NitaVNS significantly downregulated mRNA expression of pro-apoptotic markers BAX, BAK1, and caspase-8 in colitic mice and increased IL-10 mRNA expression in both colitic and non-colitic mice.
- NitaVNS significantly increased TGF-β protein levels in both colitic and non-colitic mice, while decreasing splenic TNF-α levels in non-colitic mice.
- The study used C57BL/6 male mice with 5% DSS-induced colitis for five days and applied NitaVNS at 10 V, 10 minutes, 500 µS pulse width, and 20 Hz frequency for six days starting one day before colitis induction.
- The authors suggest NitaVNS may lead to novel therapeutic strategies in ulcerative colitis; one co-author is employed by the company providing the stimulator.

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