Role of TRPV1 in colonic mucin production and gut microbiota profile

Study carried out at DBT- National Agri-Food Biotechnology Institute (NABI), Mohali, focused on exploring the role of sensory cation channel Transient Receptor Potential channel subfamily Vanilloid 1 (TRPV1) in gut health, specifically mucus production and microflora profile in gut. The present study provides first evidence that systemic TRPV1 ablation leads to impairment in mucus production and causes dysbiosis in gut. Further, it suggests to address mucin production and gut microbiota related adverse effects during the development of TRPV1 antagonism/ablation-based therapeutic and preventive strategies.

Team employed resiniferatoxin (ultrapotent TRPV1 agonist) induced chemo-denervation model in rats and studied the effects of TRPV1 ablation on colonic mucus secretion patterns. Histological and transcriptional analysis showed substantial decrease in mucus production as well as in expression of genes involved in goblet cell differentiation, mucin production and glycosylation. The 16S metagenome analysis revealed changes in abundance of various gut bacteria, including decrease in beneficial bacteria like Lactobacillus spp. and Clostridia spp. Also, TRPV1 ablation significantly decreased the levels of short chain fatty acids, i.e. acetate and butyrate. The work was recently published in European Journal of Pharmacology.

**Link:** [https://doi.org/10.1016/j.ejphar.2020.173567](https://doi.org/10.1016/j.ejphar.2020.173567)

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