Colorectal distension induced allodynia in TNBS-treated rats

A MODEL OF IRRITABLE BOWEL SYNDROME (IBS)

Model

Irritable Bowel Syndrome (IBS) is a functional disorder of the large and small intestines, which causes abdominal pain or discomfort in the absence of identifiable physical pathology such as inflammation or tumors. The pain occurs along with constipation or diarrhea. Other common symptoms are bloating, passing mucus in the stools, or a sense that the bowels have not been completely emptied.

Species

Rat

Interest

- TNBS-induced allodynia is a reproducible model that morphologically and symptomatically resembles human IBS.
- Seven days after TNS administration at the proximal colonic level, visceral pain is evaluated at the distal colonic level allowing to test colorectal distension on no inflammatory tissue, as in IBS patients.
- This model is validated by the clinically relevant compound pregabalin.
- This model of TNBS-induced allodynia is a rapid and relevant preclinical model to test therapeutic approaches for the treatment of IBS.

Model Description

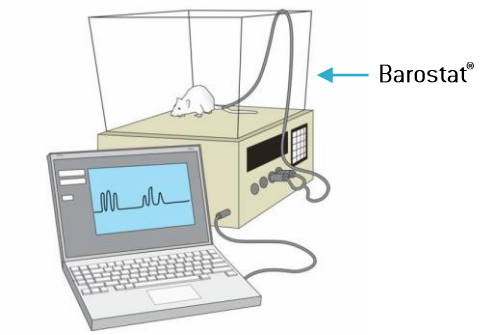
- Under isoflurane anesthesia, Trinitrobenzene sulfonic acid (TNBS) (50 mg/kg, 1.5 mL/kg) was administered into the proximal colon at 1 cm from the cecum.
- On day 7, a balloon (5 cm in length) were inserted through the anus and kept in position by taping the catheter to the base of the tail. Using a Barostat®, the balloon were progressively inflated by step of 5 mmHg, from 5 to 75 mmHg by step of 30 s.
- When abdominal cramp occurred, CRD was stopped. The first abdominal contraction corresponds to the pain threshold. Four cycles of distension were performed on the same animal with an interval of 10 min.
- Tested compounds can be administered *via* various routes (i.v., i.p., s.c., p.o., intracolonic).

Parameters evaluated

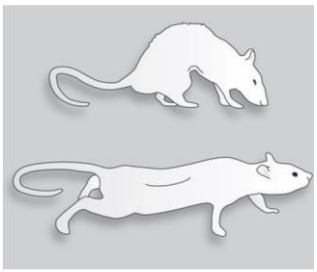
- Pain threshold (mmHg): pain threshold corresponds to the pressure inducing the first abdominal cramp.
- The abdominal cramp is defined as a contraction of the flank accompanied with hind limb extensor motion.

CRD induces allodynia in TNBS-treated rats

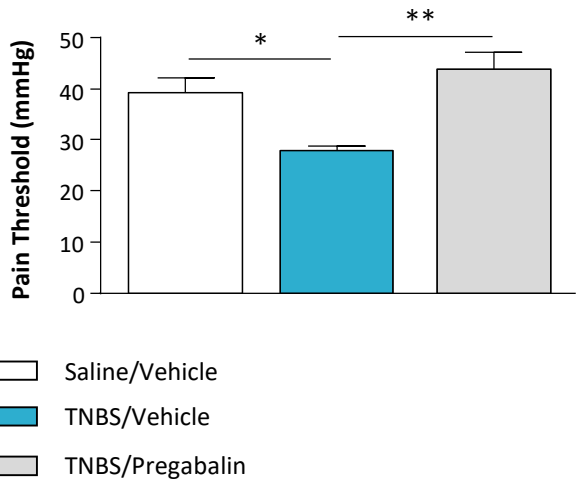
A. Intra colonic balloon is progressively inflated using Barostat®



B. CRD induces behavioral visceral pain characterized by abdominal cramps



Pregabalin (100 mg/kg, s.c.) decreases TNBS-induced allodynoia



*P<0.05 **P<0.01 (n=7-8/group)