Peritoneovisceral pain induced by acetic acid

A MODEL OF ABDOMINAL AND VISCERAL PAIN

Model

Visceral pain is a common symptom associated with gastrointestinal pathologies such as Irritable Bowel Syndrome (IBS) and Inflammatory Bowel Disease (IBD). Acetic acid (AA) injection induces an inflammation of the abdominal cavity wall and evokes sustained writhing behavior related to peritoneovisceral pain which can be readily measured. Reduction of this behavior is used to test the efficacy of drugs with visceral antinociceptive activity.

Specie

Mouse

Interest

- AA-induced peritoneovisceral pain is a rapid and relevant preclinical model to test therapeutic approaches for pain management in IBS and IBD.
- This model is minimally invasive, requires few preparation of animal and allows observation in freely moving animals.
- The clinically relevant compound morphine reverses AA-induced peritoneovisceral pain.

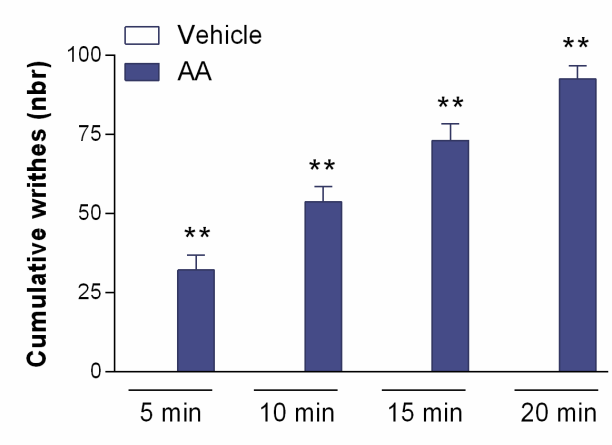
Model Description

- Animals receive intraperitoneal injection of 0.75% acetic acid in saline.
- The number of writhes (abdominal constrictions accompanied by body extension and hind limb stretching) was counted 5 min after acetic acid injection and for a period of 20 min
- Tested compounds can be administered via various routes (*i.v., i.p., s.c., p.o.*, intracolonic).

Parameters evaluated

- Latency to the first pain-related writhing behavior
- Number of writhes per 5 min period

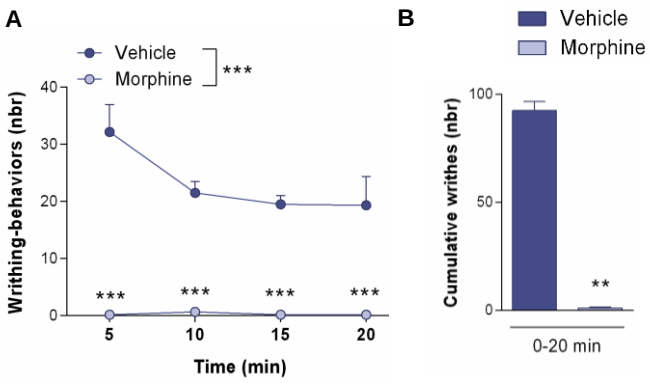
Intraperitoneal AA injection induces spontaneous peritoneovisceral pain



Intraperitoneal acetic acid (AA) injection increases the number of writhes from 5 min to 20 min observation period.

** P<0.01, (n=6/group).

Morphine reverses AA-induced peritoneovisceral pain



In mouse model of peritoneovisceral pain induced by the intraperitoneal injection of acetic acid (AA), morphine (3 mg/kg, s.c.) significantly inhibits pain-related writhing behavior expressed as either number of writhes per time point (A) or cumulative number of writhes occurring during the observation period (0 to 20 min) (B).

** P<0.01, *** P<0.001, (n=6/group).