Visceral pain induced by mustard oil

A MODEL OF COLONIC PAIN AND HYPERSENSITIVITY

Model

Visceral pain is a common symptom associated with gastrointestinal pathologies such as Irritable Bowel Syndrome (IBS) and Inflammatory Bowel Disease (IBD). Mustard oil (MO, allyl-isothiocyanate) activates and sensitizes nociceptors. Intracolonic MO instillation induces a chemical stimulation of colonic tissues. Spontaneous pain behavior from visceral origin can be readily measured.

Specie

Mouse

Interest

- Mustard oil-induced visceral pain is a rapid and relevant preclinical model to test therapeutic approaches for pain treatment 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 mustard oil-induced visceral pain.

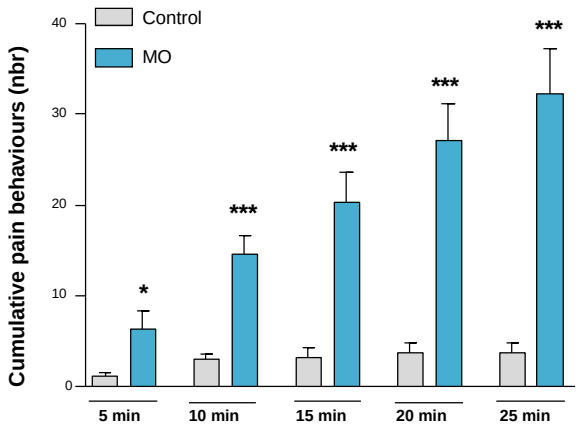
Model Description

- Animals receive intracolonic instillation of 0.01% mustard oil in 70% ethanol under isoflurane anesthesia.
- After 5 min of recovery, spontaneous pain-related behaviors are observed and recorded over a 25 min period.
- 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 behavior
- Number of visceral pain-related behavior : licking and/or stretching of the abdomen, squashing of the lower abdomen against the floor and abdominal retraction

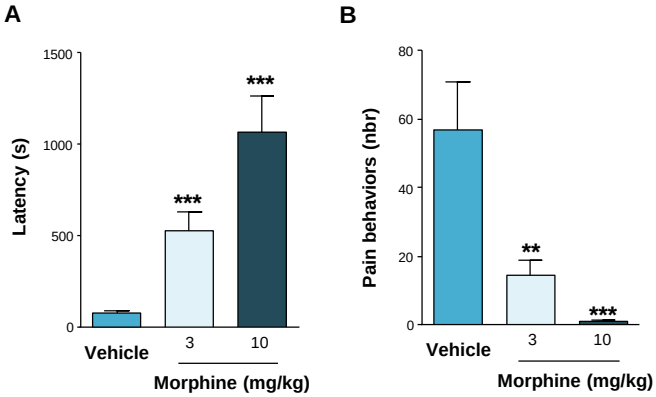
Intracolonic MO instillation induces spontaneous visceral pain



Intracolonic mustard oil (MO) instillation increases the number of behaviors from 5 min to 25 min observation period after MO administration.

* P<0.05, *** P<0.001, (n=8/group).

Morphine reverses MO-induced visceral pain



In mouse model of visceral pain induced by the intracolonic instillation of mustard oil (MO), morphine (3 and10 mg/kg, *s.c.*) significantly inhibits visceral pain-related behavior either expressed as latency to the first behavior (A) or as total number of behavioral pain responses (B).

** P<0.01, *** P<0.001, (n=17 for Vehicle group and n=8-9 for Morphine groups)