

## NOCICEPTION

### Formalin-induced nociception

The experimental animal model of formalin-induced pain was developed by Dubuisson and Dennis (1977)<sup>1</sup>. The injection of formalin into the skin of rodent hind paws resulted in nociceptive response that can be divided into two distinct phases with different duration and underlying mechanisms. This experimental model is responsive to many classes of analgesic drugs<sup>2</sup>.

**Species:** *Mus musculus* (CD1).

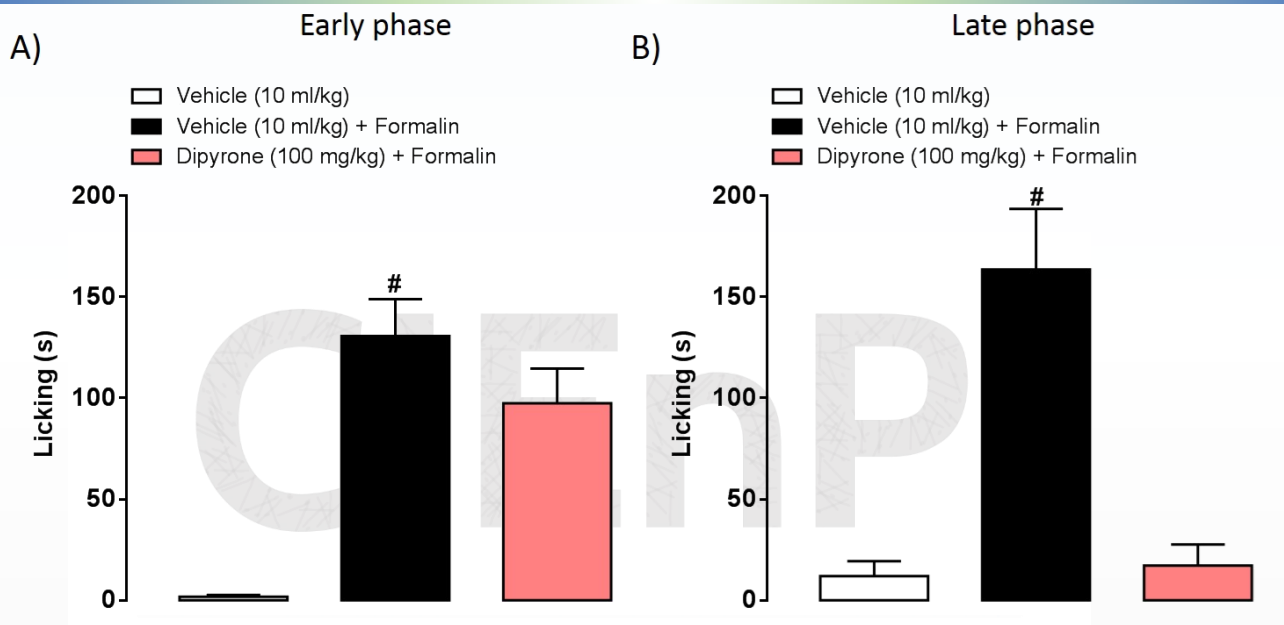
**Number of animals/group:** 5-7 animals.

**Route of administration:** upon request.

**Treatment mode:** upon request.

**Main Read-outs:** Total licking time during 0-5 minutes for phase I (the acute phase) and 15-30 minutes for phase II (the tonic phase).

### Validation Data



**Figure:** The formalin test in mice. Effect of dipyrone (100 mg/kg), against the early phase (A) and the late phase (B), of intradermal (i.d.) formalin-induced licking into the mice. Dipyrone was administrated by oral route 1 hour before the formalin injection. The total time spent licking the hind paw was measured in the early (0-5 min) and the late phase (15-30 min) after (i.d.) injection of formalin (2,5%) into the hind paw. Negative control received saline solution (0,9% NaCl, i.d.). Each column represents the mean ± SEM of 5-7 mice per group. For statistical analyses was used one-way (ANOVA) followed by Student–Newman–Keuls. #P < 0.05 versus negative vehicle group.

To avoid bias and to allow reproducibility all in vivo experiments follow the ARRIVE guidances<sup>3</sup>. Mouse colony from Charles River Laboratories are bred and maintained in SPF conditions. The project includes study plan and final report. Raw data are inspected by quality assurance unity. The experimental procedures was previously approved by the CIEnP Committee on the Ethical Use of Animals.

#### References:

<sup>1</sup>Dubuisson, D. and Dennis, S. G. (1977). The formalin test: a quantitative study of the analgesic effects of morphine, meperidine, and brain stem stimulation in rats and cats. *Pain* 4(2): 161-174.

<sup>2</sup>Taylor, B. K., Peterson, M. A. and Basbaum, A. I. (1995). Persistent cardiovascular and behavioral nociceptive responses to subcutaneous formalin require peripheral nerve input. *J Neurosci* 15(11): 7575-7584

<sup>3</sup>Kilkenny C, Browne WJ, Cuthill IC, Emerson M, Altman DG. Animal research: reporting in vivo experiments: The ARRIVE guidelines. *PLoS Biol.* 8 (6): e1000412, 2010.

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