

## **Assessment of Tactile and Mechanical Allodynia in Rat Models of Neuropathic Pain using Manual and Electronic von Frey.**

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**Aim of Investigation:** Tactile and mechanical allodynia are symptoms experienced by many patients suffering from different pathology especially from neuropathy. In patients with post-traumatic / postsurgical neuropathic pain, different methods were performed to evaluate tactile and mechanical allodynia. In rat, different models such as Chronic Constriction Injury (CCI) and Spared Nerve Injury (SNI) mimic neuropathic pain symptoms. The objective of pharmacological labs is to develop new analgic to treat this specific pain and a growing need is observed in *in vivo* models of neuropathic pain but also in relevant tests able to detect the small variation of pain and especially tactile allodynia. The objective of this study was to assess the tactile and mechanical allodynia in rat models of neuropathic pain using manual and electronic of von Frey.

**Methods:** Male Sprague-Dawley rats (SPF status, Janvier, France), were used in the two neuropathic pain models. In the CCI model, rats (100-140 g the day of the surgery) underwent a sciatic nerve ligation. In the SNI model, tibial and peroneal nerves were sectioned on rats. Fourteen to twenty one days after surgery, tactile and mechanical allodynia were evaluate using manual von Frey and the up-and-down method described by Chaplan et al, 1994 or using the electronic von Frey, respectively. 50% response threshold and paw withdrawal thresholds were measured in rats treated with opioids and antiepileptics compounds.

**Results:** Tactile and mechanical allodynia was evidenced in both models. Marked increase in both paw withdrawal thresholds and 50 % response thresholds were observed in both neuropathic pain models after a single administration of morphine (3 mg/kg, s.c). However an acute administration of pregabalin (60 mg/kg, p.o.) did not show any significant variation in the paw withdrawal thresholds measured with electronic von Frey but a marked and dose related antiallodynic effects when tested with the manual von Frey.

**Conclusions:** In this study, manual von Frey using the Chaplan method showed more sensitive measurement of the tactile allodynia as evidence by a better detection of pharmacological efficacy of the antiepileptic compound, the pregabalin. Our study evidenced a difference of sensitivity of both technics of evaluation of tactile and mechanical allodynia and help to be more relevant in the choice of the technic used depending on the pharmacological treatment with the objective of development of new analgic compounds for the neuropathic pain treatment.

### **Results:**

Bennett – eVF = 3300-2 n°9

Bennett – mVF = 3300-2 n°76

SNI – eVF = 3300-P10 n°7

SNI – mVF = 3300-2 n°93