## Abstract

## Gelsemium effect against nerve injury-induced mechanical allodynia and hyperalgesia

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Background Gelsemium dilutions are prescribed for their anxiolytic and its analgesic effects. Investigations using alkaloids isolated from Gelsemium support the hypothesis of Gelsemiuminduced analgesia. Aims We evaluated the antinociceptive effect of Gelsemium dilutions 3, 5 and 9C in neuropathic models. **Methodology** To investigate the potential effect of Gelsemium dilutions 3, 5 and 9C to prevent or to correct sciatic nerve chronic constriction (CCI) injury, we used the von-Frey hair behavioral test. CCI-induced neuropathic pain in rats represents characteristic painful behaviors like hyperalgesia and allodynia, thus validating its suitability for the evaluation of anti-neuropathic drugs. To test the corrective effect, *Gelsemium* 3, 5 or 9 C or placebo were administered from Day 14 after sciatic nerve ligation, i.e., when neuropathic symptoms were observed. In the preventive strategy, *Gelsemium* dilutions and placebo began immediately after the sciatic nerve ligation (D0). **Results and discussion** We observed that in placebo groups, the mechanical-sensitivity thresholds remained unchanged all treatment days whereas Gelsemium dilutions 3C and 5C exerted a strong or moderate antinociceptive effect, respectively. In CCI-rats, the contralateral paw of placebo-treated animals did not respond to 4g non-noxious stimulation but the ipsilateral responses increased progressively (0%-D0, 52%-D14, 72%-D21 and 88%-D28), confirming the occurrence of allodynia. Gelsemium dilution 3C corrective and preventive treatments efficiently reduced the allodynic responses (72-to-38%-D21 and 88-to-22%-D28). Gelsemium 5C also exhibited significant antiallodynic action while Gelsemium 9C was ineffective. Similarly, one week treatment with Gelsemium 3 or 5C efficiently reduced 15g or 26g-evoked hyperalgesia and the beneficial action improved after 2 weeks. Chronic therapies with current analgesics induce several side-effects. **Conclusion** The present work, suggest that Gelsemium dilutions devoid of toxicity and used as anxiolytic in humans induced analgesia, opens interesting/alternative perspectives for long-term management of pain without undesirable effects.

## Keywords: Gelsemium, neuropathic pain; peripheral nerve constriction, therapeutic strategy

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