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 Gelsemium-induced 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 anti-allodynic 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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