Antinociception, tolerance, and physical dependence comparison between morphine and tramadol

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The mechanism of action of tramadol includes the activation of opioid receptors, and the potential ability of the drug to induce tolerance and physical dependence has been evaluated in different animal species and humans. This work was designed to study the involvement of opioid receptors in the antinociceptive activity and the potential ability to develop tolerance, crosstolerance, and/or physical dependence of tramadol. The writhes induced by acetic acid administration was used as algesiometric test. After chronic administration of tramadol, tolerance was evaluated by measuring the antinociceptive activity, and physical dependence was measured by naloxone administration. Morphine was used as drug of comparison. The IP administration of tramadol produced a dose-dependent antinociception with an ED50 value of 7.82 ± 1.16 mg/kg, which was unchanged after chronic administration of either tramadol (39.1 or 100 mg/kg) or morphine (1.05 or 100 mg/kg). By contrast, the ED50 for morphine (0.2