

Dextromethorphan attenuates morphine withdrawal syndrome in neonatal rats passively exposed to morphine

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摘要

Abstract

We had previously found that co-injection of dextromethorphan, an antitussive drug and a non-competitive NMDA receptor antagonist, with morphine into dam rats throughout the pregnancy period could attenuate the naloxone-precipitated morphine withdrawal syndrome in their offspring. In the present study, we further tested whether postnatal injection of dextromethorphan into the neonatal rats or a 3-day co-injection of dextromethorphan with morphine into the dam rats before delivery is also effective. Female Sprague-Dawley rats were bi-daily injected with escalating doses of morphine from a week before mating till the first postnatal week. Withdrawal syndrome of morphine in the offspring, manifested mainly as abdominal stretching, was generated by injection of naloxone on postnatal day 5. Direct injection of dextromethorphan into the offspring effectively reduced the severity of naloxone-precipitated abdominal stretching in a dose-dependent manner. A 3-day co-treatment with dextromethorphan given to the dam rat before delivery also had a similar attenuating effect, but the efficacy was lower than that produced by postnatal injection. Thus, the results from the present study support that dextromethorphan is of potential in treating or preventing neonatal morphine withdrawal syndrome.