Naloxone precipitates nicotine abstinence syndrome and attenuates nicotine-induced antinociception in mice

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Abstract:
The present study focused on the evaluation of a role of opioid system in nicotine-induced antinociception and physical dependence in mice. The results indicate that nicotine (3 mg/kg) produced a significant antinociception in the hot plate test. Additionally, the opioid receptor antagonist naloxone (0.5 and 1 mg/kg), dose-dependently attenuated this effect. Our second experimental protocol consisted in intermittent administration of nicotine (2.5 mg/kg, sc) four times daily for 7 days. In order to precipitate nicotine abstinence, mice were given one injection of mecamylamine (3 mg/kg) or naloxone (1 mg/kg) one hour after the last nicotine injection on the test day (day 8) in the morning. Interestingly, our findings revealed that both drugs precipitated somatic withdrawal signs in mice, with a slight difference in their influences on the intensity of several signs. These data support the hypothesis that similar opioid-cholinergic interactions are involved in nicotine-induced antinociception and nicotine withdrawal syndrome.

Key words:
nicotine, naloxone, mecamylamine, antinociception, withdrawal, mice