

论著

吗啡成瘾和应激诱导复发的大鼠脑内神经甾体水平的变化

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收稿日期 2005-3-11 修回日期 网络版发布日期 2008-5-6 接受日期 2005-7-21

摘要 目的 观察大鼠吗啡成瘾及应激诱导成瘾复发是否与脑组织神经甾体水平的变化有关。方法 给大鼠注射吗啡 ($5 \text{ mg} \cdot \text{kg}^{-1} \cdot \text{d}^{-1}$, ip, 18: 00~20: 00) 并在条件性位置偏爱(CPP)箱中训练, 每日1次, 连续10 d, 最后1次给药后24 h测试大鼠是否产生CPP。再经过7 d的自然消退期后, 给予足底电击(0.5 mA, 0.5 s, 间隔40 s, 15 min)诱发大鼠CPP复发, 电击后2 h进行CPP测试。测试后立即取样, 取样时间18: 00~20: 00, 气相色谱-质谱联用技术测定大鼠脑组织神经甾体。结果 给予吗啡并训练10 d, 大鼠形成明显的CPP, 同时脑组织内神经甾体孕烯诺龙和别孕烯诺龙水平显著升高。经过7 d的自然消退后再给予足底电击可诱发大鼠CPP复发, 脑组织神经甾体脱氢表雄酮和硫酸脱氢表雄酮水平显著升高。结论 大鼠吗啡成瘾及应激诱导成瘾复发过程可能与脑组织内源性神经甾体水平有关。

关键词 [吗啡](#) [成瘾复发](#) [应激](#) [神经甾体](#)

分类号 [R971](#)

Change in brain neurosteroid level of rats in morphine addiction and stress induced relapse condition

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Abstract

AIM To investigate if morphine addiction and relapse to morphine-seeking is related to the change of neurosteroid levels in the brain of rats. **METHODS** Rats were injected ip morphine ($5 \text{ mg} \cdot \text{kg}^{-1} \cdot \text{d}^{-1}$, 18:00–20:00) and trained in conditioned place preference (CPP) box, once daily for 10 d. CPP test was performed 24 h after the last training. After discontinued training for 7 d for CPP extinction, then intermittent and inescapable foot-shock (FS, 0.5 mA, 0.5 s on, 40 s off, 15 min) was applied to rats as the priming stimuli for relapse. CPP test was performed 2 h after FS. When CPP test finished, rats were decapitated and the levels of neurosteroids were analyzed using gas chromatography/mass spectrometry. **RESULTS** CPP was established when rats were injected morphine and trained for 10 d. At the same time, the levels of pregnenolone and allopregnanolone in the brain tissues of rats were significantly increased. When CPP was reinstated in morphine-treated rats by FS-stress after 7 d CPP extinction, the levels of dehydroepiandrosterone and dehydroepiandrosterone sulfate were significantly increased. **CONCLUSION** The development of morphine addiction and relapse may be related to endogenous neurosteroids in rat brain tissues.

Key words [morphine](#) [addiction relapse](#) [stress](#) [neurosteroids](#)

DOI:

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