

The Effect of Injection of L-Arginine and L-NAME in the Rat's Intra-Hippocampal (CA₁) in Morphine-Induced Antinociception in Formalin Test

Hashemi, M.¹, Karami, M.², Zarrindast, M. R.³, Sahebgharaniraei, M.⁴

Abstract

Introduction: Intra-hippocampal CA₁ injections of L-arginine, a nitric oxide precursor and N^G-Nitro-L-arginine Methyl Ester (L-NAME), a nitric oxide synthase inhibitor, on morphine-induced antinociception in rat formalin test were investigated. **Method:** To induce inflammation pain, male Wistar rats received subcutaneous (s.c.) injections of formalin (50 µl at 2.5%) once prior to testing. Morphine (3-9 mg/kg) was injected intraperitoneally (i.p.) 10 min before injection of formalin. Present study show that pre-administration (5 min) of L-arginine (0.15, 0.3, 1.0 and 3.0 µg/rat), but not L-NAME (0.15, 0.3 and 1.0 µg/rat) to the administration of formalin, during testing at the early phase reversed morphine-induced response. But at the late phase both agents' injections caused a significant effect. The response to L-arginine was blocked by L-NAME pre-administration. On the other hand, L-arginine or L-NAME by itself did induce pain behavior at the late phase. According to data interactions between morphine and L-arginine was statistically significant. **Conclusion:** Based on the finding, NO in the rat hippocampal CA₁ area is involved in morphine-induced antinociception.

Key word: morphine, antinociception, CA₁, L-arginine, formalin test, rat, L-NAME

۹
۹

سال پنجم، شماره ۱۹، پاییز ۱۳۹۰
Vol. 5, No. 19, Autumn 2011

-
1. Author-in-chief: M. A. of basic sciences of Shahed University. E. mail: mahboob_m80@yahoo.com
 2. Assistant professor of physiology department of Shahed University
 3. Professor of pharmacology department, Tehran Medical Sciences University
 4. Assistant professor of pharmacology department, Tehran Medical Sciences University