Title	Different spinal effects of opioid agonists on spinal and spino-bulbo-spinal reflexes in rats
Sub Title	
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Publisher	共立薬科大学
Publication year	1990
Jtitle	共立薬科大学研究年報 (The annual report of the Kyoritsu College of Pharmacy). No.35 (1990.),p.66- 66
JaLC DOI	
Abstract	
Notes	抄録
Genre	Technical Report
URL	https://koara.lib.keio.ac.jp/xoonips/modules/xoonips/detail.php?koara_id=AN00062898-00000035-0066

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Different Spinal Effects of Opioid Agonists on Spinal and Spino-Bulbo-Spinal Reflexes in Rats*

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The effects of morphine-HCl (MOR), methionine-enkephalin (ME) and dynorphin₁₋₁₃ (DYN) on spinal and spino-bulbo-spinal (SBS) reflexes were studied. Although spinal intrathecal administration of MOR (15 μ g) did not produce any apparent effect on these reflexes, systemically administered MOR (3 mg/kg i.v.) reduced the electrical toe stimulation-induced SBS reflex. Furthermore, MOR (3 mg/kg i.v.) increased the polysynaptic reflex induced by electrical stimulation of low-threshold dorsal root afferents in intact (non-spinal) rats, but not in spinal rats. Intrathecally administered DYN (0.5 and 5 μ g) reduced both the electrical toe stimulation-induced spinal and SBS reflexes, while ME (15 μ g) only reduced the SBS reflex. These results indicate the physiological multiplicity of spinal opioid receptors. MOR may affect supraspinal nuclei but not the spinal pathway which possesses MOR-sensitive opioid receptors, whereas ME and DYN affect spinal opioid peptide receptors and modulate the reflex activities in which they participate.

* 本報告は J Neural Transm [GenSect] (1990) 79: 1—9 に発表.

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