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Technical Report

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 µg) 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 µg) reduced both the electrical toe stimulation-induced spinal and SBS reflexes, while ME (15 µg) 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.

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