

Effect of melatonin on rat spinal cord nociceptive transmission

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Melatonin has been shown to exert potent antinociception but the sites and mechanisms of action underlying this effect have not yet been clarified. The effect of melatonin on spinal cord nociceptive transmission was studied in rats by assessing wind-up activity in a C-fiber reflex responses paradigm evoked by repetitive (0.6 Hz) electric stimulation. Intraperitoneal administration of 1.25, 2.5, 5.0 and 10.0 mg/kg melatonin induced a dose-dependent inhibition of spinal wind-up activity, the higher dose of the drug used being able to depress completely the C reflex gain. Results indicate that melatonin markedly depresses spinal wind-up in rats, probably through hyperpolarization of dorsal horn neurons consecutive to melatonin binding to membrane receptors, and/or via intracellular interference with a NMDA receptor-dependent nitric oxide generating pathway. © 2002 Lippincott Williams & Wilkins.