



Effects of norepinephrine on the electrical activities of pain-related neurons in the rat nucleus accumbens

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Abstract:

This study examined the effects of norepinephrine (NE) and phentolamine on the electrical activities of pain-excited neurons (PENs) and pain-inhibited neurons (PINs) in the nucleus accumbens (NAc) of Wistar rats. Trains of electric pulses applied to the right sciatic nerve were used to provide noxious stimulation, and the discharges of PENs and PINs were recorded using a glass microelectrode. Our results revealed that in response to noxious stimulation, NE decreases the evoked discharge frequency of PENs and increases the evoked discharge frequency of PINs in the NAc of healthy rats, whereas phentolamine produced opposite responses. These results demonstrate that NE is involved in the modulation of nociceptive information transmission in the NAc.

Key words:

norepinephrine, phentolamine, electrical activity, pain-related neuron, nucleus accumbens
