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Circadian variation of antinociceptive effect of adenosine and adenosine A١ receptor agonists, N٦-phenylisopropyl adenosine and ٢-chloroadenosine, in mice

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Abstract

In this research circadian variation of antinociceptive effect of adenosine and two A١ adenosine receptor agonists, (R) N٦-phenylisopropyl adenosine (R-PIA) and ٢-chloroadenosine (٢-CAdo), and pain were studied in male mice that housed under control light phase for two weeks. Circadian variation of pain was performed on intact mice by using hot plate test. Doses of ٤٠, ٢ and ٠,٦ mg/kg of adenosine, ٢-ClAdo and R-PIA, respectively were injected intraperitoneally to three separated groups of six male mice at six hour intervals (٠٩:٠٠, ١٥:٠٠, ٢١:٠٠, and ٠٣:٠٠). The control group received normal saline. The result of circadian rhythm of pain showed that the minimum nociceptive effect was observed in dark phase in mice and it was time dependent. The peak of antinociceptive effect of adenosine was in dark phase (٢١:٠٠ P.M.) at ٠,٥ h after of injection. The results of ٢-ClAdo indicated that maximum of antinociceptive effect was in dark phase and results of R-PIA exhibited that peak of antinociceptive activity was in light phase. This study indicated that the pattern of pain in male mice has circadian variation. The antinociceptive effect of adenosine and its two agonists was time dependent. This circadian variation in antinociceptive activity may be important in the administration of these agents.

Reaxys Database Information

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Indexed Keywords

EMTREE drug terms: ٢ chloroadenosine; adenosine; phenylisopropyladenosine

EMTREE medical terms: animal experiment; antinociception; article; circadian rhythm; controlled study; light exposure; male; mouse; nonhuman; pain

Chemicals and CAS Registry Numbers: ٢ chloroadenosine, ١٤٦-٧٧-٠; adenosine, ٥٨-٦١-٧; phenylisopropyladenosine, ٢٠١٢٥-٤٠-٠
Manufacturers:Drug manufacturer: Sigma.

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