Vinpocetine and piracetam exert antinociceptive effect in visceral pain model in mice

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Abstract:
The effect of vinpocetine or piracetam on thermal and visceral pain was studied in mice. In the hot plate test, vinpocetine (0.9 and 1.8 mg/kg), but not piracetam, produced a reduction in nociceptive response. Vinpocetine (0.45–1.8 mg/kg, ip) or piracetam (75–300 mg/kg, ip) caused dose-dependent inhibition of the abdominal constrictions evoked by ip injection of acetic acid. The effect of vinpocetine or piracetam was markedly potentiated by co-administration of propranolol, guanethidine, atropine, naloxone, yohimbine or prazosin. The marked potentiation of antinociception occurred upon a co-administration of vinpocetine and baclofen (5 or 10 mg/kg). In contrast, piracetam antagonized antinociception caused by the low (5 mg/kg), but not the high (10 mg/kg) dose of baclofen. The antinociception caused by vinpocetine was reduced by sulpiride; while that of piracetam was enhanced by haloperidol or sulpiride. Either vinpocetine or piracetam enhanced antinociception caused by imipramine. The antinociceptive effects of vinpocetine or piracetam were blocked by prior administration of theophylline. Low doses of either vinpocetine or piracetam reduced immobility time in the Porsolt’s forced-swimming test. This study indicates that vinpocetine and piracetam possess visceral antinociceptive properties. This effect depends on activation of adenosine receptors. Piracetam in addition inhibits GABA-mediated antinociception.

Key words:
vinpocetine, piracetam, thermal pain, visceral pain, mice