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Effects of a dopamine receptor agonist and atropine sulfate on absorption of valproic acid in rats

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ABSTRACT

The aim of this study is to determine whether pramipexole hydrochloride hydrate (PHH) and atropine sulfate affect valproic acid (VPA) pharmacokinetics and to evaluate how plasma VPA concentrations are altered by different PHH administration routes. The following studies were conducted on rats: 1) changes in plasma VPA concentration after simultaneous oral administration (PO) of PHH and VPA-Na; 2) effects of intraperitoneal administration (IP) of PHH on plasma VPA concentration after VPA-Na PO; 3) effects of PHH PO on plasma VPA concentration after intravenous administration (IV) of VPA-Na; and 4) changes in plasma VPA concentration after simultaneous PO of atropine sulfate and VPA-Na. Atropine sulfate PO significantly decreased the area under the concentration-time curve up to 3 h (AUC0-3, the total amount of drug plasma concentration) of VPA, suggesting that atropine sulfate decreases VPA-Na absorption probably due to reduced gastrointestinal motility by its anticholinergic action. Similarly, by PHH PO or IP, VPA AUC0-3 was significantly decreased. However, in cases of VPA-Na IV, all VPA parameters were unchanged by PHH PO. These results indicate that the PHH inhibitory effect may be caused in the absorption phase of VPA by pharmacological action of PHH, and thus PHH decreases VPA-Na bioavailability.

[PDF (450K)] [References]

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