ANALGESIC EFFECT OF GABAPENTIN

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ABSTRACT

This study was carried out to study the effect of a single dose of Gabapentin (GBP) (10 mg/kg I.P.) on the pattern of neurotransmitters namely γ-aminobutyric acid (GABA), Serotonin (5HT) and Norepinephrine (NE) in the Thalamus, Hypothalamus (TH) and Cerebral Cortex (CC) of rat’s brain in hyperalgesia induced experimentally in rats by formalin (60 ug/i.pL, in right hindpaw). Results of the present work revealed that hyperalgesia significantly reduced 5HT, and NE levels (P ≤ 0.05) in C.C. Moreover, GBP (10 mg/kg, I.P.) produced significant increase in 5HT and NE levels, (P ≤ 0.05), in the tested areas of rat’s brain which may account for its analgesic effect.

INTRODUCTION

Gabapentin (1-[aminomethyl]-cyclo-hexane acetic acid), GBP, is an anticonvulsant approved in the United States in 1994 for use in adult patients with partial epilepsy (Backonja t al, 1998), and generalized tonic-clonic seizures (Chadwick, 1992). GBP was synthesized as a GABA-mimetic that could freely cross blood brain barrier (Chadwick, 1992). Reviews of clinical literature (Rosner et al, 1996, Stacey et al, 1996, Sindrup and Jensen, 1999) indicate that GBP is effective in relieving various forms of chronic pain. Of chemical neurotransmitters known to mediate pain is Serotonin (5HT) (Redjemi et al, 1974), electrical stimulation of the raphe nuclei in the cat, leads to analgesia (Mayer et al, 1971), other findings suggesting that serotonin system were in some way involved in opiate analgesia (Fields and Levine, 1984). Other brain transmitters included in