

Poster presentation

Effect of valproic acid and azadirachta indica on behavioral alterations and antioxidative stress in pentylenetetrazol-induced kindling in rats

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Background

The present investigation was designed in order to clarify the effects of valproic acid and azadirachta indica on seizures and antioxidative enzymes in pentylenetetrazol-induced epilepsy.

Materials and methods

Forty Sprague Dawley strain male rats were taken and divided into four groups, containing ten animals each. Group A (Vehicle): They received injections of normal saline intraperitoneally (i.p.) daily for the period of six weeks; Group B (PTZ): Pentylenetetrazol (PTZ, 40 mg/Kg) was injected to them i.p. for inducing chemical kindling on alternate days; Group C (PTZ + Valproate): Pentylenetetrazol (PTZ, 40 mg/Kg) was injected to them i.p. for inducing chemical kindling on alternate days and Valproic acid (VPA, 200 mg/Kg) was administered to them orally as an anticonvulsant daily and Group D (PTZ + Neem): Pentylenetetrazol (PTZ, 40 mg/Kg) was injected to them i.p. for inducing chemical kindling on alternate days and Azadirachta indica (Neem, 100 mg/Kg) was given to them orally also as an anticonvulsant daily. Seizure severity was measured according to a prevalidated scoring scale. Kindling score was recorded regularly after PTZ administration during the whole experiment. Mean onset time of jerks, clonus and extensor phases following PTZ challenge was noted. At the end of six weeks, all animals were sacrificed and different antioxidative enzymes activity such as Glutathione S transferase, Catalase, Glutathione Reductase and Nitric oxide were measured in

brain spectrophotometrically. Lipid peroxidation activity was also measured in brain.

Results

Decrease in Seizures severity in Groups C (PTZ + Valproate) and Group D (PTZ + Neem) was observed as compared to Group B (PTZ). Decrease in Lipid peroxidation enzymes, Glutathione S transferase activity, Catalase and Nitric oxide activity was observed in Groups C (PTZ + Valproate) and Group D (PTZ + Neem). However, increase in the activity of Glutathione Reductase was observed in the same groups. Due to this finding, we suggest that the usage of VPA and Neem, in epilepsy might protect brain against anoxic damage and oxidative stress due to prolonged seizures.

Conclusions

It was also concluded in the present study that Azadirachta indica has more preventive effects than Valproic acid on PTZ induced chemical kindling in rats.

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