Efficacy of Saraswatha Churna in Pilocarpine Induced Rat Model of Epilepsy

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Aim and Background:

Epilepsy is a neurological disorder presenting with unprovoked recurrent seizures and in a pilcarpine model, the focus largely rests on temporal lobe epilepsy. In pilocarpine model of epilepsy, one of the main presenting feature would be hippocampal sclerosis along with the involvement of limbic system and a seizure-free interval before recurrent seizures. Hippocampus is involved with learning and memory, and forms an important component of the central nervous system. In our study, we have attempted to evaluate the neuroprotective effect of Saraswata Churna (SC) in pilocarpine induced rat model of epilepsy. This ayurvedic preparation SC, has been used in the treatment of neurological disorders. Prevention of damage to the neurons in the hippocampus is one of the ways of evaluating a drug for its neuroprotective efficacy.

Methodology:

In our study, four month old male Wistar rats (n = 24) were divided (n=6) into four groups; Normal Control (NC), Pilocarpine Group (PI), Phenytoin Group (PH) and Saraswatha Churna (SC). Of these groups, NC was maintained under normal conditions, PI group were injected with pilocarpine (270mg/kg.b.w.) for model creation, PH group were injected with phenytoin

(30 mg/kg.b.w.) and SC group were treated with oral dose of Saraswata Churna (308 mg/kg.b.w.). At the end of 22^{nd} day, the animals were sacrificed and their brains were processed for Cresyl violet staining. The CA3 region of the hippocampus was quantified for the number of surviving and degenerating neurons in all the four groups. The counts were tabulated for analysis using SPSS (v.16.0).

Result:

The numbers were calculated for mean and standard deviation. The comparison between the groups showed a significant ($p<0.01$) increase in the number of surviving neurons in the SC group as compared against both the PI and PH groups. On the contrary, there was also a significant ($p<0.001$) decrease in the number of degenerating neurons in the SC groups when compared with the PI and PH groups.

Conclusion:

Our initial studies show that SC has the potential to mitigate the structural changes undergone by the hippocampus in a pilocarpine induced rat model of epilepsy. Further studies could help us to understand the mechanism of neuroprotection provided by SC.