3. Objectives

Main objective of the present work was to investigate the antiepileptic potential of curcumin and L-deprenyl against FeCl₃-induced post-traumatic epilepsy. The experimental work conducted in this thesis is to understand:

1. Development and progression of FeCl₃ induced epileptic seizures characterized as Grade I,II,III and IV in the cortex and hippocampus regions of young and old rats
2. Long-term and short-term effect of 500 and 1500ppm respectively curcumin as dietary supplement on the said brain regions of FeCl₃ induced epileptic model in rats.
3. Long-term and short-term effect of L-deprenyl on epilepsy.

Above objectives were studied in the light of following experiments:

a) Electrophysiology:
   i) To characterize the electrophysiological development and progression of seizure in young and old during epileptogenesis.
   ii) To investigate the spectral composition of the transient spike wave discharge appearing in the in electrocorticogram (ECoG) and depth EEG.
   iii) To investigate the effects of curcumin dose in retarding the onset and development of seizures in electrocorticogram.
   iv) To assess effect of L-deprenyl on arrival of electrobehavioral seizures in the ipsi-contralateral EEG recording from cortex and hippocampus

b) Biochemical studies:
   i) To estimate LP, PO, Na-K ATPase, Membrane Fluidity and Ca²⁺ dependent PKC activity associated with grade IV seizures in FeCl₃ injected rats in comparison to saline injected and control operated rats.
   ii) To evaluate the effect of curcumin and L-deprenyl on aforementioned biochemical parameters in FeCl₃ induced epileptic rats.

c) Histology / Micrometry
   i) To evaluate cytomorphological alterations at both light and EM level in epileptic tissue
   ii) To evaluate effect of curcumin and L-deprenyl at microscopic level.
d) **Behavior**
   i) To assess epileptogenic alterations in memory and anxiety status of epileptic rats by employing MWM and open field tests.
   ii) To evaluate effect of curcumin and L-deprenyl on cognitive functions and anxiety levels in epileptic animals.

e) **Correlation**

Pearson correlation matrix was employed to illustrate the interrelationship between the different parameters studied through electrophysiology, biochemistry, histology and behavioral experiments.