In the present study a field survey was carried out in Manipur, a north-eastern state of India. The information on the indigenous uses and knowledge of plants was collected from elderly knowledgeable persons and herbalist through personal interviews and repeated discussions. A total of 24 plant species having both medicinal and toxic properties and other uses representing 16 families were reported. Among these plants namely *Datura stramonium*, *Albizia myriophylla* and *Melia azaderach* have been selected. For the present study they were studied for the possible neurotoxic effects in mice using various behavioral paradigms, biochemical parameters and transmission electron microscopic analysis of the cerebral cortex of mice. The behavioral tests includes locomotor activity test, open-field test, elevated plus maze test, hole-board test and forced swimming test. The enzyme assays done were catalase, lactate dehydrogenase, glutamate oxaloacetate transaminase and glutamate pyruvate transaminase in the mice brain. The aqueous extract of *D.stramonium* leaves, *A.myriophylla* bark and *M.azaderach* were prepared and they were used for qualitative phytochemical analysis. This includes the presence of certain phytochemical constituents such as alkaloids, tannins, saponins, cardiac glycosides, terpenoids, phlobatannins and flavanoids. In addition the aqueous extract of *D.stramonium* have been studied for antimicrobial activity against *Bacillus subtilis*, *Pseudomonas aeruginosa* and *Klebsiella pneumoniae*. The highest zone of inhibition of 16mm was shown against *K.pneumoniae* at the concentration of 200mg/ml.

All the three plant extract were administered into various groups of mice and were subjected to behavioral studies, biochemical assays and electron microscopic examinations. The results were compared to that of the control animals. MK-801, a potent N-methyl-D-aspartate receptor antagonist was administered to the treated mice and it was seen if this could confer possible neuroprotection against the
The major findings of the present study are summarized below:

1) The aqueous extract of *D.stramonium* leaves, *A.myriophylla* bark and *M.azedarach* fruits caused detrimental changes in the behavior of the animals when treated at the specific doses.

2) All the plant extracts also produced an alterations in the activities of the various enzymes studied.

3) The ultrastructure of the cerebral cortex of extract treated mice showed damaged and abnormal structures of various cell organelles.

4) MK-801 provided a significant neuroprotective effect against the neurotoxicity induced by the plants.

So considering the above findings, it can be concluded that all the three plants studied in the present work are neurotoxic to mice at the dose used and thus serious concern needs to be taken for the use of these plants for medicinal purposes. The neurotoxicity can be attributed to phytochemical components present in the extract and this needs to be further investigated. It is also shown that MK-801 can be used as a neuroprotective agent to ameliorate the neurotoxicity.