10. SUMMARY AND CONCLUSION

The present study was carried out to produce some pharmacognostical standards and these finding’s may help to proper identification and ensures the quality of the drug and for the enhanced use of these plants in pharmaceutical herbal formulations. In view of our interest in the chemical constituents of indigenous medicinal plants, the present phytochemical re-evaluation of the dried stem bark of *Cissus quadrangularis* and fruit pulp of *Aegle marmelos* has now been carried out. The isolated compound was subjected to spectral studies UV and FT-IR. The isolated compound was partly confirmed with those observations. Further, that the isolated compound was subjected for proton NMR, MASS spectroscopy etc.

No lethal effects were observed after the administration of doses of combined ethyl acetate extract of stem bark of *Cissus quadrangularis* & fruit pulp of *Aegle marmelos* (c-EACA) and combined ethanol extract of stem bark of *Cissus quadrangularis* & fruit pulp of *Aegle marmelos* (c-ECA) dry extract. Mild behavioral changes, reversible after 24 h, were observed only after the administration of 2000 mg/kg doses. Thus, the value of *LD*$_{50}$ for oral administration of c-EACA &c-ECA extracts were found to be larger than 2000 mg/kg.

Overall, this study provides valuable preliminary data on the toxicity profile of c-EACA and c-ECA extracts that are useful for the planning of imminent pre-clinical and clinical studies of this medicinal plant. The chronic toxicity study reveals that at doses consumed in the traditional medicine, the c-EACA and c-ECA extracts were considered as relatively safe, as it did not cause either any lethality or remarkable changes in the general behavior in chronic toxicity studies in rodents and in high doses the extracts may have a hypoglycemic, hypolipidemic and anti-obesity effect. In addition, no histological changes were observed in stomach, liver and kidney. Studies of this type are required before a phytotherapeutic agent can be generally recommended for use.
The c-ECA and c-EACA extracts had potential anti-bacterial properties. From the results, it was found that the disc diffusion method and well-in agar method was best suited for studying anti-bacterial activity. These results also support the popular use of these plants in traditional medicine for the treatment of fever, wound infections and intestinal disorders. This study also helps to detect different kinds of growth inhibition by plant extracts. Although the test organisms that were used now provide good evidence that the plants possess potential anti bacterial effects.

The c-ECA and c-EACA extracts have showed significant antioxidant activity in DPPH assay, FTC method, TBA method and qualitative analysis of c-ECA and c-EACA extracts by TLC plate method. Results of invivo anti-oxidant study have suggested that, carbon tetrachloride intoxication damage to erythrocytes was confirmed by the elevation of lipid peroxidation, superoxide dismutase and catalase activities and inversely decreases the glutathione reductase & glutathione peroxidase in erythrocyte membrane fluidity.

Pre-treatment of experimental animals with the c-EACA and c-ECA exhibits an improved free radical scavenging resulting in decreased activities of superoxide dismutase, catalase and the concentration of lipid peroxidation products towards normal. The cumulative effect of carbon tetrachloride intoxication results that micro-viscosity of a membrane increases distinctly with increase in cholesterol to phospholipid ratio and thus leads to cellular rigidity.

The presence of flavonoids in c-EACA and c-ECA extracts might be responsible for their observed antioxidant activity. Since reactive oxygen species and free radicals were involved in oxidative stress and pathogenesis of cancer, diabetes mellitus, atherosclerosis and inflammation, the use of these plants may be advantageous in preventing initiation or progress of many diseases.

The cross killing occurred due to cytotoxic activity against the Colon cancer- HT-29 cell lines. The results of the present study had demonstrated the potent cytotoxic activity of the combined ethanolic
and ethyl acetate extracts of *Cissus quadrangularis* and *Aegle marmelos*. The phytochemical constituents such as flavonoids and terpenoids are the major components which are responsible for the potential cytotoxic activity.

In anti-epileptic activity, treatment with c-EACA & c-ECA on rats significantly reduces tonic hind leg extensor stage in MES induced epilepsy. The MES model was used to identify compounds which prevents seizure, related to generalized tonic clonic seizures in humans. Treatment with c-EACA & c-ECA on PTZ induced rats significantly reduce the duration of convulsion and delayed the onset of clonic convulsion.

Although animal models based on pentylenetetrazole (e.g. pentylenetetrazole threshold and acuteconvulsions) have still been widely used for drug screening, the mechanism by which pentylenetetrazole bring out its action has not been completely understood. But PTZ model can be used for identification of anticonvulsant activity of drugs for the partial seizures or “petit mal” epilepsy. Pentylenetetrazole exert its action by acting as an antagonist at the picrotoxin sensitive site of the GABA receptor complex.

Biogenic amines participate in the control or increases the threshold of Maximal electroshock and pentylenetetrazole induced seizure in rat models. Hence the results suggested that c-EACA & c-ECA possess antiepileptic properties that may be due to potential activity of GABA and the restorage of biogenic amines in rat brain. These results support the ethnomedicinal uses of these plants in the treatment of epilepsy.

It was observed that c-EACA & c-ECA at the higher dose given i.e. 500 mg/kg p.o. possessed significant inhibition against carrageenan induced paw edema in rats. This response tendency of the c-EACA & c-ECA extracts in carrageenan-induced paw edema revealed good peripheral anti-inflammatory
properties of the extract. Thus it reveals that c-EACA & c-ECA possess anti-inflammatory properties that may be due to the presence of flavonoids and steroids which increases the activity of extract.

This study emphasizes the accuracy and efficacy of traditional remedies and that it inspires people to realize the importance of protecting natural resources for sustainable use. This study also illustrates the strong dependence of certain people on traditional medicine and the uniqueness in which plants such as *Cissus quadrangularis* and *Aegle marmelos* and their extracts can be utilized for many diseases such as inflammation, wounds, cancer and convulsion etc.