6. SUMMARY

Medicinal plants have the capacity to produce a large number of organic phytochemicals with complex structural diversity is known as secondary metabolites. Some of these secondary metabolites are produced for self-defense. Over the last 20 years, a large number of secondary metabolites from different plant species have been evaluated for their hepatoprotective and anti-oxidant activities.

The demand on plant based therapeutics is increasing in both developing and developed countries for various reasons. They are natural products, non-narcotic, easily biodegradable, pose minimum environmental hazards, with no adverse side-effects and are easily available at affordable prices.

Large numbers of plants belonging to different families have been studied for their therapeutic properties. However, plants such as *A. marmelos* and *E. prostrata* belonging to Rutaceae and Asteraceae respectively which have many medicinal properties, have not been studied for their hepatoprotective and antioxidant activities. Hence the present study was focused on hepatoprotective and antioxidant activities of *A. marmelos* and *E. prostrata* by using aqueous extracts of both the plants against alcohol induced albino rats. The results were statistically analysed. From the investigations the following findings were made:
The phytochemical studies showed the presence of carbohydrate, alkaloids, proteins, phytosterols, tannins and phenols in both the plants, absence of flavanoids in *E. prostrata* and saponin in *A. marmelos*.

Atomic absorption spectroscopy analysis showed the presence of trace elements in both *A. marmelos* and *E. prostrata* which include sodium, potassium, calcium, zinc, copper, manganese and iron. Concentration of trace elements in *E. prostrata* was higher than in *A. marmelos* except manganese.

GC-MS analysis revealed the occurrence of 33 compounds in *A. marmelos* and 16 compounds in *E. prostrata*.

In haematological analysis, the aqueous extract of *A. marmelos* effectively enhanced haemoglobin (Hb), packed cell volume (PCV), red blood cells count (RBC), mean corpuscular volume (MCV), mean corpuscular haemoglobin (MCH), mean corpuscular haemoglobin concentration (MCHC), white blood cells count (WBC) and platelet levels in alcohol intoxicated albino rats than in the extract of *E. prostrata*.

The enzymatic antioxidants such as SOD, LPO, CAT, GSH, GPx and GST and the non-enzymatic antioxidant parameters such as Vit-E and Vit-C were significantly increased in alcohol intoxicated rats treated with the extracts of test plants showed the strong antioxidant activity of test plants.

The hepatic enzymes such as SGOT, SGPT, ALP and GGT were significantly decreased in alcohol intoxicated animals when treated with the extracts of *A. marmelos* and *E. prostrata*. The results
supported that the *A. marmelos* has maximum hepatoprotective capacity than *E. prostrata*.

- In histopathological study, the test plants *A. marmelos* and *E. prostrata* treated group showed minimal inflammation with moderate portal triaditis and their normal lobular architecture and thereby confirmed the hepatoprotective efficacy of test plants.
This is concluded with the observations suggested that, among the two plants, *A. marmelos* has significant hepatoprotective activity than *E. prostrata*. These findings provide enough scientific evidence to support traditional medicinal uses and indicate a promising potential for the development of hepatoprotective agents from these plants. It is very important to assess natural products for their efficacy in the treatments of many dangerous diseases. In recent times, due to economic factors, people scramble for available, easily accessible and less costly medication, even with the slightest knowledge of efficacy and the minimum idea of toxicity. Herbal remedies to most people, are natural and non-toxic. Hence these plants can be used to discover bioactive natural products that may serve for the development of new pharmaceuticals. Development of phytomedicine from experimental plants are relatively inexpensive and less time consuming. Moreover, it is suitable to our economic conditions.