CHAPTER 6

SUMMARY

Naturally occurring compounds are of great importance as a reservoir of chemical diversity aimed at new drug discovery and are screened for various pharmacological activities such as wound healing, anti-inflammatory, anti-diabetic, anti-cancer, antioxidant etc. The development of plant-based pharmaceuticals requires a multidisciplinary approach directed towards ultimate production of crude drugs, standardized extracts and pure compounds or intermediates for modern drugs. Development of these products requires sustained and often expensive effort. Hence the initial selection of plants having medicinal potentialities is extremely important. The results obtained in the present study are as follows:

- Soil analysis report revealed that the soil was found to be clay loamy soil. Qualitative phytochemical analysis of the leaf sample extracted with hexane, chloroform, ethanol and aqueous revealed the presence of alkaloids, flavonoid, terpenoids, steroids, coumarin, tannin, saponins, glycosides, quinones, phenols, protein and starch.
- Quantitative analytical report of the leaf sample showed the presence of maximum amount of crude fat and fibres followed by starch. Ash, moisture content and elemental analysis was also carried out.
- Pharmacognosy of the leaf was studied by microscopic features of midrib, lamane, epidermal tissue and petiole.
- In excision wound model, the ointment made with the leaf extract of *A. tetracantha* showed a faster wound healing activity compared with the control. Compared to standard drug nitrofurazone ointment, the ointment made with ethanolic leaf extract showed more significant wound healing activity.
- In dead space wound model, the leaf extract of *A. tetracantha* showed a significant increase in the granulation tissue when compared to control.
- The leaf extract were found to exert a significant anti-inflammatory activity compared to control and standard drug indomethacin.
• The increase in the reaction time i.e. the latency between the noxious stimulus and the response was prolonged in groups treated with leaf extract and pentazocine when compared to control, revealing that the leaf extracts have more significant analgesic activity.

• The leaf extract at a dosage level of 200 mg/kg significantly lowers the body temperature after four hours of administration. The antipyretic activity of the extracts was also compared to the standard drug paracetamol.

• The leaf extract of the plant shows significant antiulcer activity. It was compared with control and standard drug famotidine 20 mg/kg.

• In hepatoprotective activity, following CCl4 administration, there was a significant decrease of antioxidant enzymes and the significant increase in the levels of thiobarbituric acid reactive substances, AST, ALT, ALP, ACP and bilirubin, were observed which was reduced to near normal values after administration of the extract. These results shows that the leaf extracts have significant hepatoprotective activity. It was compared with control and standard drug silymarin 25 mg/kg.

• A significant reduction in the blood glucose, total cholesterol, triglycerides, VLDL, LDL and the significant increase in the level of HDL, were observed at the end of fourteenth day of leaf extract treatment at 200 mg/kg in the alloxan induced diabetic rats compared to diabetic control. It was also compared to the standard drug glibenclamide (5 mg/kg) and the control.

• Tumour volume and viable tumour cell count significantly decreased in leaf extract treated groups when compared to control. More significant reduction was observed in the dose of 200 mg/kg body weights. It was also compared with the standard drug treatment group 5-Fluoro uracil 20 mg/kg.

• There was a significant increase of median survival time and life span of the mice in the dosage of 200 mg/kg followed by 100 mg/kg. The values were also compared with standard drug 5-Fluoro uracil.

• The results of fluorescent characters of the extract gave distinct colours in visible light, 254 nm and 365 nm. The preliminary phytochemical screening of ethanolic leaf extract of A. tetracantha showed the presence of alkaloids, flavonoids,
terpenoids, quinone, tannins, saponins, starch, phytosterol, protein, coumarin, phenol and absence of gum, glycosides fixed oil, fat and catachin. Four solvents like hexane, chloroform, aqueous and ethanol are used for extraction of phytochemical constituents. Among them, ethanol was found to be an excellent solvent compared to chloroform hexane and aqueous.

- About twenty-six components were isolated from leaf extract using GC-MS. Five main components like vitamin -E, n-hexadecanoic acid, phytol, squalene and acetic acid (dodecahydro-7-hydroxy-1, 4b, 8,8-tetramethyl-10-oxo-2 (1H)-phenanthrenylidene)-2-((dimethyl amino) ethyl ester was found to be maximum.

- HPTLC finger printing of the leaf extract of *A. tetracantha* was photo documented at 254 nm. The peaks appeared at Rf value of 0.62 was found to be same for the leaf extract as well as the standard Rutin flavonoid.

- Chemical characterization of the extract was performed using HPLC and NMR spectroscopy (^H NMR and ^C NMR) and IR spectroscopy. HPLC results established that the presence of two components like (1-methoxy-1H-indol-3-yl) methanol and 2-(3,4-dihydroxyphenyl)-7-hydroxy-6-(3,4,5-trihydroxy-6-(hydroxy methyl) tetrahydro-2H-pyran-2-yl)-4H-chromen-4-one in the leaf extract. The structure of the components separated was confirmed by NMR, IR and mass spectral studies.