7. SUMMARY AND CONCLUSION

In this project pharmacognostic analysis of plants confirms the authenticity of the plant as per previous reports. Roots of *C. hirsutus*, leaves of *B. priotitis* and fruits of *B. amarissima* were investigated for pharmacognostic, preliminary phytochemical and various pharmacological activities.

A detailed pharmacognostical evaluation of roots of *C. hirsutus*, leaves of *B. priotitis* and fruits of *B. amarissima* was carried out. Morphoanatomy of the leaves, roots and fruits was studied to aid pharmacognostic and taxonomic species identification using microscopy, physicochemical determinations and authentic phytochemical procedures.

Preliminary phytochemical evaluation indicated the presence of carbohydrates, glycosides, steroids, saponins, tannins, phenolic compounds, proteins and flavonoids. MEBP indicated the presence of alkaloids, glycosides, flavonoids, tannins terpenoids, steroids and phenolic compounds whereas MEBA and MECH was found to exhibit presence of flavonoids, carbohydrates and saponins.

For screening of pharmacological activities, the powdered dried parts of plants were extracted with methanol to prepare whole methanolic extract. These extracts were screened for various pharmacological activities like antioxidant activity, anticancer activity, antiarthritic activity, anti-inflammatory activity, analgesic activity, antihypertensive activity, anticonvulsant activity, anxiolytic activity and acute toxicity potential. The pharmacological activities of methanolic extracts of MECH, MEBP and MEBA observed in this study strongly indicated their great potential against various ailments.

MECH, MEBP and MEBA were evaluated for antioxidant activity in comparison with ascorbic acid by two in-vitro methods viz. DPPH radical scavenging method and Super oxide radical scavenging method. All extracts were found to have good radical scavenging activity against DPPH and Super oxide radicals. MECH, MEBP and MEBA were found to have significant antioxidant activity due to the presence of flavonoids and phenolics compounds.
Acute toxicity study the extracts of MECH, MEBP and MEBA were performed to find out the test dose according to the Organization of Economic Co-operation and Development (OECD) guidelines-423. The extracts were to produce no mortality or any significant toxicity even at a dose of 3000 mg/kg (MECH and MEBP) and 2500 mg/kg (MEBA). None of the doses of the extracts showed any mortality.

MEBA exhibited significant anticancer activity by micronucleus bone marrow test. For cyclophosphamide treated groups the frequency of MNPCE was significantly higher as compared with the experimental groups (treated with plant extracts). MECH and MEBA showed no significant activity.

The antitumor activity was assessed using survival time, solid tumor volume, and haematological parameters. MEBA exhibited significantly reduction in tumor volume as compared to EAC control group. Mean survival time and percentage of life span in mice was increased in MEBA treated groups as compared to control. MEBA showed significant anticancer activity whereas MECH and MEBP showed no significant activity.

MECH and MEBP showed significant antiarthritic activity in dose dependant manner. Mice injected with proteoglycans developed clinical signs of arthritis. MEBA showed no significant activity in both experimental models for arthritis. MECH and MEBA have a promising anti-arthritic activity since it was active in both the inflammation models and adjuvant.

The present study investigated for the preliminary assessment of the antidiabetic activity of the MECH, MEBP and MEBA. The extracts showed a dose-dependent activity in alloxan induced diabetic rats. Phenolic compounds have been found to be beneficial in controlling diabetes. All the extracts showed presence of phenolic compounds. Hence, the beneficial effect may also be due to the presence of phenolic compounds.

Streptozotocin is a nitrosourea compound produced by Streptomyces achromogenes, which specifically induces DNA strand breakage in β-cells causing diabetes mellitus. MECH, MEBP and MEBA have a promising anti-
diabetic activity since it decreased the blood glucose level significantly in streptozotocin induced diabetic rats.

MECH, MEBP and MEBA were evaluated for anti-inflammatory activity by carrageenan induced rat paw edema method. All the extracts demonstrated significant anti-inflammatory activity by reduction in carrageenan induced edema when compared with the control group. MECH showed better anti-inflammatory activity than MEBP and MEBA.

MECH, MEBP and MEBA were evaluated for analgesic activity using hot plate test in mice. All the extracts were found to have significant analgesic activity.

MEBP showed significant antihypertensive activity by DOCA salt. SBP and DBP were increased persistently in DOCA salt treated nephrectomised rats as compared to normal rats and MEBP. MECH and MEBA showed no significant activity.

MECH and MEBP showed central anxiolytic effects and anticonvulsant activity whereas MEBA showed no significant anticonvulsant activity and anxiolytic activity.

Present studies indicate the therapeutic potential of *C. hirsutus, B. prionitis* and *B. amarissima* in cancer, arthritis, diabetes and inflammatory diseases respectively where the extracts have exhibited significant activity. Further the fractionations and isolation of active moiety can result in to new arena in the treatment of variety of diseases affecting billions of people of the world. Many herbal products containing either organic powder or extracts are being marketed for various ailments. Our study will provide for rational in use of herbs or their extracts for the ailments of which models have been studied during present study where extracts were found effective.