Summary and Conclusion
Plant derived natural products diosgenin, codeine, reserpine, quinine, cocaine, atropine etc. are highly effective drugs in the treatment of several human ailments. The Indian system of medicine (Ayurveda, Unani and Siddha) mainly prescribe plant-derived drugs. In recent years, the chemistry and biochemistry people are using the combination of chromatographic techniques and bio-assay studies, to isolate natural products responsible for variety of biological properties. The wide variety of compounds isolated from plants have diverse physiological properties such as medicinal, anticancer, antifungal pesticidal, plant growth promoting activity and diabetes etc. Now-a-days several natural products are being screened for a wide range of biological activity in particular as antidiabetic to type-I and type-II. Throughout the world, intense screening of plants for anti-diabetic principles in the past three decades resulted in the identification of some plants - *Coccinia grandis* (Donda aaku), *Enicostema axillare* (Resca), *Gymnema sylvestre* (Podapatri), *Pongamia pinnate* (Kanuga) and *Coccinia indica* (Donda) etc. which have ant-diabetic principles and the possibility of developing into commercial drugs.

Some of the natural products with remarkable antidiabetic activity are discussed in this thesis. The aim of the present study was to examine the chemical constituents of indigenous medicinal plant like *Alternanthera*
*Alternanthera sessilis* and *Caralluma attenuata* for their physiological activity and antidiabetic activity.

The phyto-chemical analysis of ethanolic and aqueous extracts of both the plants and their medicinal properties were carried out. The preliminary identification tests were also performed. The alcoholic and water extracts of *Alternanthera sessilis* and *Caralluma attenuata* on silica gel G TLC plate with different mobile phases showed different bands at various Rf values and colour reactions indicating the presences of glycosides, tannins, triterpenes, saponins, steroids, protein and amino acids. The HPLC fingerprints of all the extracts showed different peaks confirming the presence of various constituents. The TLC and HPLC finger printing were used for the quality control of the raw material and finished product for nullifying the batch-to-batch variation. The ethanol extract of *Alternanthera sessilis* on column chromatography yielded the compounds designated as compound A, B and C. The structural elucidation of compound-A was carried out and based on authentic standards was identified as a β-amyrin and compound B was identified as Stigmasterol and compound C was identified as β-sitosterolglycoside.
The ethanol extract of *Caralluma attenuata* on column chromatography yielded the compounds designated as compound D and E. The structural elucidation of compound-D was carried out and was identified as Calocinin glycoside.

From the preliminary studies, it was evident that the dose 200 mg/kg body weight was found effective and the same was administered for all the investigations. The hypoglycemic activity results of both the plants revealed that all the extracts significantly reduced the sugar levels in the rats. The maximum reduction in blood glucose was observed from 109.32 to 71.67 for alcoholic extract of *Alternanthera sessilis* and from 102.94 to 72.49 for alcoholic extract of *Caralluma attenuata* in rats. The extracts showed reduced blood glucose levels in STZ induced Diabetic rats indicating the antidiabetic activity of the formulated drugs. The sub-acute study of alcoholic extracts of both the plants for 24 days, showed a significant decrease in serum glucose of Diabetic rats. There was no insulin secreting effect observed with *Caralluma attenuata* extracts whereas *Alternanthera sessilis* extract showed significant insulin secreting activity. And an attempt to develop a new formulation using, *Elecuniea corcana* (Ragi), soya powder and *Cicerarietinum*, all three were germinated before
use to increase their nutritional value and the enriched mixture of the above mentioned plants were added with fructose, guar gum and milk powder. The new formulation was found to be very stable during the stability study. The new formulation showed significant antidiabetic and hypoglycemic activity in rabbits. In case of clinical study there was a significant reduction in FBSL in newly diagnosed patients of NIDDM from 166.79 to 130 mg%. Similarly there was a significant reduction in the PPBSL from 237 to 184.50 mg% after one month of use. In those patients who consumed new formulation along with OHA’s there was a highly significant reduction in FBSL from 149.24 to 126.51 mg% after one month and PPBSL from 225.63 to 182.32 mg% at the end of the study. There was a significant improvement in the general symptoms of NIDDM such as generalized weakness, fatigue, leg cramps, burning sensation in hands and soles and patients started feeling more active. Further, a significant reduction in the sugar levels in rabbits and a significant reduction in FBSL and PPBSL in the newly diagnosed patients of NIDDM and a highly significant reduction in FBSL and PPBSL in those patients who consumed new formulation with OHA’s was observed. In general, there was a significant improvement in general symptoms in both the groups after treatment. And it can be concluded that the selected plant extracts showed significant hypoglycemic
and antidiabetic activity. The present formulation was rich in fibre and protein content and also various other active constituents and had a good acceptability for new herbal formulation, which might be because of its palatability and absence of side effects. So, the formulated drug can be an effective formulation for controlling type-II Diabetes.