CHAPTER - V

SUMMARY AND CONCLUSIONS
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The management of diabetes mellitus is considered as a global problem and successful treatment is yet to be discovered. The modern drugs including insulin and other oral hypoglycemic agents such as biguanides, sulphonyl ureas, α-glucosidase inhibitors control the glucose as long as they administered regularly and they have undesirable side effects. These side effects, lack of curative treatment for several chronic diseases have led to the discovery of complementary and alternative medicines. The use of medicinal plants in modern medicine refers from the fact that thousands of plants are used in world to prevent or cure diabetes, specific evidence in terms of modern medicine are lacking. Therefore in this investigation an attempt has been made by taking aqueous leaf extract of CG and its protective role has been studied by using the albino rat as experimental material. To study the protective role the effect on enzymes related to carbohydrate metabolism and antioxidant defense in control, diabetic and diabetic treated rats was compared.

After studying the protective effect of CG, the observations are summarized below:

- The treatment of leaf aqueous extract of CG decreased the plasma glucose by increasing the plasma insulin levels.
During the dose determination 70 and 130 mg/kg bw dose of leaf extract showed better glucose lowering affect.

Decreased levels of total Hb, liver glycogen and high levels of HbA1c were restored after oral administration of CG extract.

Serum and tissue carbohydrate metabolizing enzymes were altered in diabetic rats. After treatment with CG extract the HK activity was decreased and Glu-6-P and Fru-1,6-bis phosphatase levels were increased.

Oral administration of CG extract significantly reactivated the glycogen synthase due to increased insulin secretion.

LDL, VLDL and HDL cholesterol levels were significantly altered in diabetic rats. Serum and tissue concentrations of lipid parameters were significantly restored by the treatment of CG leaf extract.

The CG leaf extract increased the non-enzymatic (ascorbic acid, α-tocopherol and GSH) and enzymatic (SOD, CAT and GPx) antioxidant levels during diabetes.

Lipid peroxidation and glycosylation of proteins caused reduction in the activities of enzymes and alterations in the structure and functions of membranes.

Administration of CG leaf extract to diabetic rats showed a significant elevation of activities of total ATPase in erythrocyte membranes.
➢ Oral administration of CG-leaf extract improved the liver function by decreasing the serum ALT, AST and ALP levels in diabetic rats.

➢ Oral administration of CG-leaf extract significantly improved the glycoprotein levels in diabetic rats.

➢ Histopathological studies clearly demonstrated the restoration of β-cell biomass by the administration of CG-leaf extract.

Thus, the leaf extract of CG did not produce any toxic effects on liver and kidney during acute or chronic conditions. The principle was not lethal in the range of 70 to 130mg/kg bw and exerts antidiabetic effects and control the several biological parameters during diabetes in albino rats.