Chapter-2: AIM AND OBJECTIVE

Herbal medicine is still the mainstay of about 70-80% of the world population. Plants have always been an exemplary source of drugs and many of the currently available drugs have been derived directly or indirectly from them.

The ethnobotanical information reports about 900 plants that may possess anti-diabetic potential. Wide arrays of plants representing active principles of numerous chemical compounds have demonstrated activity consistent with their possible use in the treatment of diabetics. Among these are anthraquinones, glycosides, polysaccharides, peptidoglycans, flavonoids, tannins, steroids, glycopeptides, terpenoids and inorganic ions. The introduction of these indigenous herbal compounds in the management of diabetes mellitus will greatly simplify the management and make it less expensive.

Thus, identification of potential anti-diabetic agents using mechanism-based studies holds great promise for elucidating mechanisms and devising more specific and effective treatments for diabetes-related diseases. One of the approaches used in drug discovery is the ethnomedical data approach, in which the selection of a plant is based on the prior information on the medicinal use of the plant.

The aim of the present study is to investigate the anti-diabetic activity of *Butea monosperma* in STZ-diabetic rats. The main objective of the study is to investigate the possible actions of the metabolic disorders, with a view to provide the scientific basis for its anti-diabetic property as claimed by many traditional healers. In addition the anti-inflammatory activity also evaluated. In the final analysis toxicity study was also carried out.

**Objectives of the present study are as follows:**

i. Collection and extraction of *B. monosperma* leaves and flowers using hexane, ethyl acetate, methanol and screening for their toxicity studies, anti-diabetic and anti-inflammatory activity.

ii. To identify the active crude extract of *B. monosperma* responsible for anti-diabetic and anti-inflammatory activities.

iii. To determine the effective dose of active fraction and to evaluate the long term effect for its antidiabetic property in STZ-diabetic rats.
iv. To study various biochemical parameters such as blood glucose, oral glucose tolerance test, plasma insulin, total hemoglobin, glycosylated hemoglobin, hepatic glycogen. In addition to this, to study the key carbohydrate metabolic enzymes such as hexokinase, glucose-6-phosphatase and fructose-1, 6-bisphosphatase in serum, liver and kidney.

v. In order to find out the antioxidant effect, plasma and tissue hydroperoxides, enzymic and non enzymic antioxidants will be assayed, respectively. All the results will be compared with that of a standard drug, Glibenclamide.

vi. To evaluate the antihyperlipidemic effect, the parameters like total cholesterol, triglycerides, free fatty acids, HDL, LDL and VLDL-cholesterol levels in serum and tissues (liver and kidney) will be studied in diabetic rats. All the results will be compared with that of a standard drug, Glibenclamide.