NEED AND OBJECTIVE

Diabetes mellitus is the most common and significant chronic endocrine disorder affecting approximately 16 million individuals in U.S. and as many as 200 million worldwide. Diabetes shows highest occurrence between age group 45 to 64 (42% of total), about 5% are under 25 years and 13% between 25 to 44 years of age. It is seen that females are in the majority in every age group. At all ages the female diabetics are nearly 35% greater in number than male diabetics (Marble, 1971).

Diabetes mellitus is considered to be a serious endocrine syndrome. Synthetic hypoglycaemic agents can produce serious side effects including haematological effects, coma and disturbances of the liver and kidney. In addition, they are not suitable for use during pregnancy (Pari, 2001). Despite considerable progress in the treatment of diabetes by oral hypoglycemic agents, search for newer drugs continues because the existing synthetic drugs have several limitations. In recent times there has been renewed interest in the plant remedies (Davidson, 1986). Plants hold definite promises in the management of Diabetes mellitus. In many countries it is traditional to use medicinal plants to control diabetes. The antihyperglycaemic effect of several plant extracts and herbal formulations which are used as antidiabetic remedies have been confirmed. As compared to synthetic drugs, drugs derived from plants are frequently considered to be less toxic with fewer side effects. Therefore, the search for more effective and safer antihyperglycaemic agents has become an area of active research (Pari, 2001).

Since ancient times, a number of herbal medicines have been used in the treatment of this disease and many studies have been carried out in the search of a suitable plant drug that would be effective in Diabetes mellitus. There is increasing demand by patients to use the natural products with antidiabetic activity (Pari, 2001; Dewanjee, 2008). Medicines consists of plant products, either single drug or in combination with others which are considered to be less toxic and free from side effects compared to synthetic drugs (Resmi, 2001). Herbal drugs are prescribed widely, even when their biologically active compounds are unknown, because of their effectiveness, lesser side-effects and relatively low cost (Valiathan, 1998; Momin, 1987).
Reasons for undertaking the study:

The associated disadvantages with insulin and oral hypoglycaemic agents have led to stimulation in the research for locating natural resources showing antidiabetic activity. The traditional healers are using *Careya arborea* Roxb. and *Bridelia retusa* Spreng. in the treatment of hyperglycemia.

A survey of the literature reveals that no scientific evaluation has been conducted to check the antidiabetic potential of *Careya arborea* Roxb. and *Bridelia retusa* Spreng. Also, not much phytochemical work has been done on the bark of these drugs. Keeping in view the medicinal importance of the genus and varied compounds reported, it is worth while to evaluate these drugs pharmacognostically, phytochemically as well as pharmacologically for its antidiabetic property. This has prompted us to undertake this study.
OBJECTIVES OF STUDY

- Organoleptic, microscopic and physical evaluation of barks of *Careya arborea* Roxb. and *Bridelia retusa* Spreng.
- Extraction of barks of *Careya arborea* Roxb. and *Bridelia retusa* Spreng. with different techniques.
- Preliminary phytochemical analysis of different extracts of bark of *Careya arborea* Roxb. and *Bridelia retusa* Spreng.
- Determination of the LD$_{50}$ values of different extracts of bark of *Careya arborea* Roxb. and *Bridelia retusa* Spreng.
- Investigation of possible antidiabetic activities of different extracts of bark of *Careya arborea* Roxb. and *Bridelia retusa* Spreng.
- Investigation of possible mechanism of action for active extract of bark of *Careya arborea* Roxb. and *Bridelia retusa* Spreng.
- Isolation of active chemical constituents by chromatographic techniques from the most active extracts (fraction) of *Careya arborea* Roxb. and *Bridelia retusa* Spreng.
- Identification of the isolated phyto-constituent by TLC, HPTLC, U.V. Spectroscopy, IR, NMR and GC-MS.
PLAN OF WORK

Phase-1: Literature survey.
Phase-2: Selection of plants on the basis of literature survey and folklore.
Phase-3: Pharmacognostical evaluation of barks of Careya arborea Roxb. and Bridelia retusa Spreng.
Phase-4: Extraction and Preliminary Phytochemical Investigation
   1. Successive solvent extraction
   2. Aqueous extraction
   3. Alcoholic extraction
Phase-5: Pharmacological Activity
   1. Determination of Acute Toxicity Study.
   2. Antidiabetic activity:
      a. Acute study
      b. Chronic study
Phase-6: To check the mechanism of action of active fraction for anti-diabetic activity.
Phase-7: Phytochemical investigation of barks of Careya arborea Roxb. and Bridelia retusa Spreng.
Phase-8: Isolation and Identification of active chemical constituents by
   1. TLC/HPTLC
   2. Column chromatography
   3. U.V.
   4. I.R.
   5. N.M.R.
   6. GC-MS.
References
Resmi CR. Antidiabetic effect of a herbal drug in alloxan – diabetic rats. *Indian Drugs* 2001; 38(6); 319.