CHAPTER 3

Aims and objectives

3.1 Aims

Nowadays the treatment for DMs using allopathic regimens are very effective and need during emergency, but in case of chronic conditions when such therapy may leads to side effects and the multiple drug therapy leads to drug interactions, adverse effects, contra indication during pregnancy & lactation. The modern medicines include sudden fall of FBG (hypoglycemic) and diet maintenance problems.

So this is the need of the hour for the effective utilization of herbal ingredients for the treatment of DMs

Oxidative stress has been identified to be one of the causes of Diabetes mellitus which provides that plants with anti-oxidant chemical constituents would be useful in this regard [13, 15]. Plants are exemplary source of drugs and many of currently available drugs have been derived directly or indirectly from HMs. This has proved a severe need to carry out this research works related to Anti hyperglycemic activity

Thus the aim of my study is to evaluate the Anti hyperglycemic effect of poly herbal preparation using Streptozotocin- induced diabetic rats as per the following strategies.

3.2 Objectives

1) To prepare a Poly Herbal Preparation (PHP) of the selected plant leaves of 
   \textit{Asystasia gangitica}, \textit{Ficus racemosa} Linn and \textit{Morus indica} by using 70% ethanol as a solvent.

2) Calculating the \% yield of \textit{Asystasia gangetica}, \textit{Ficus recemosa}, and \textit{Morus indica} leaves extracts.

3) Phytochemical Screenings to find the ingredients.
4) *In-vitro* anti-oxidant activities on individual and PHP preparation

   i) DPPH method
   ii) \( H_2O_2 \) method
   iii) ‘NO’ method
   iv) Free radical
   v) Ascorbic acid method.

5) Selection of dose by toxicity studies and toxicity analysis on various parameters such as,

   i) General parameters
   ii) Physiological
   iii) Central Nervous System
   iv) Hematological parameters
   v) Body weight of the animals (weekly basis).

6) Blood and Serum estimations: To evaluate the effect of PHP by assessing the following biochemical parameters

   i. Fasting blood glucose (weekly basis)
   ii. Oral Glucose Tolerance Test (Initial and final)
   iii. Hemoglobin and glycosylated haemoglobin (Initial and final)
   iv. RBC and WBC counts (Initial and final)
   v. Bleeding time (BT) and Clotting time (CT) (Initial and final)
   vi. Serum total protein, total cholesterol, HDL, LDL, VLDL, Triglycerides level.

7) *In-vivo* Antioxidant studies: To estimate the antioxidant activity of the PHP using following *in-vivo* parameters in Liver tissue and Kidney tissue,

   i. Total protein (TP)
   ii. Catalase (CAT)
   iii. Super oxide dismutase (SOD)
   iv. Glutathione reductase (GR)
   v. Glutathione peroxidase (GPx)
8) Histopathological studies: To perform histopathological studies of the experimental rat’s pancreas tissues.

3.3 Stages of plan of work

1) Medicinal plant collection
2) Plant authentication
3) Plant Extraction preparation
4) Storing the Extraction
5) Preliminary Phytochemical Constituent tests
6) *In-vitro* anti oxidant activities
7) Ethical clearance and Purchasing of animals (rats)
8) Toxicity study of the poly herbal preparation
9) Experimental designs for toxicity and experimental part
10) Induction of diabetic & Treatments for designed groups
11) Blood and tissue samples collections for analysis
12) Bio-chemical estimations
13) Statistical analysis
14) Histopathology study of pancreas
15) Tabulating the results for discussion and conclusion.