CHAPTER II

2. AIM AND OBJECTIVES

AIM

A complete review on ethnopharmacological, ethnobotanical and modern scientific validation data revealed that so far no work has been done on *Myxopyrum serratulum* A.W.Hill and *Nilgirianthus ciliatus* Nees plants with regard to bioactivity particularly antidiabetic activity.

Considering the status of research on these, the study was aimed to investigate the Antidiabetic efficacy of

- Ethanolic extract of *Myxopyrum serratulum* A. W. Hill and *Nilgirianthus ciliatus* Nees
- Gelatin encapsulated *Myxopyrum serratulum* A. W. Hill and *Nilgirianthus ciliatus* Nees nanoparticles

OBJECTIVES

- To prepare and characterize different nanopreparations from *Myxopyrum serratulum* A.W.Hill and *Nilgirianthus ciliatus* Nees extracts
- To explore the antidiabetic potential of the *Myxopyrum serratulum* A.W.Hill and *Nilgirianthus ciliatus* Nees extracts and its nanopreparations on both *in vitro* and *in vivo* models
CHAPTER III

3. PLAN OF WORK

- Collection, authentication, extraction and preliminary phytochemical studies of *Nilgirianthus ciliatus* (NC) and *Myxopyrum serratulum* (MS)
- Evaluation of *in vitro* antidiabetic studies of ethanolic extracts of NC and MS by alpha amylase and alpha glucosidase inhibition assay methods
- Preparation of gelatin encapsulated *Nilgirianthus ciliatus* nanoparticles (GNCN) and *Myxopyrum serratulum* nanoparticles (GMSN) by solvent evaporation method
- Characterization of GMSN and GNCN by Particle size analysis, Zeta potential measurement, Entrapment efficiency, FTIR, TEM, SEM and *in vitro* drug release study
- *In vitro* antioxidant activity of MS, NC, GMSN2 and GNCN3 by DPPH and Nitric oxide scavenging assay methods
- Determination of nontoxic concentration of GMSN2 and GNCN3 by MTT assay
- Assessing the antidiabetic activity of GMSN2 and GNCN3 by Glucose uptake and antiadipogenic assay in L6 and 3T3L1 cell lines respectively
- Evaluation of antidiabetic effect of MS and GMSN2 by High fat diet (HFD) induced type 2 diabetes in C57BL/6J mice
- Biochemical, Histopathological and Immunohistochemical analysis of vital organs for supporting the antidiabetic effect
PLAN OF WORK

Collection and authentication of selected medicinal plants

Extraction and preliminary phytochemical studies

*In vitro* antidiabetic activity

Development of gelatin encapsulated herbal extract nanoparticles

Characterization by SEM, TEM, EE, PS, *in vitro* drug release

*In vitro* antidiabetic studies

*In vitro* antioxidant studies

*In vivo* antidiabetic activity by HFD induced diabetes in C57BL/6J mice model

Biochemical analysis

Histopathological analysis

Immuno histochemical analysis