CHAPTER 2 - OBJECTIVES OF THE STUDY

The primary objective of the work was to evaluate the anti-obesity effects of various extracts of *Alpinia galanga* rhizomes and *Argyreia speciosa* roots in validated high fat diet induced obesity in experimental rats. The whole study was divided into different phases as below-

**Phase I:**

- Collection and shade drying of *Alpinia galanga* rhizomes and *Argyreia speciosa* roots.
- Identification and authentication of the collected plant material.
- Standardization of plant material
- Extraction of the powdered plant material with different solvents using soxhlet apparatus and maceration.
- To carry out preliminary qualitative phytochemical investigation of the extracts obtained.
- To carry out oral toxicity studies and determine the LD$_{50}$ and selection of experimental doses for the study (i.e. $1/4^{th}$ of the LD$_{50}$ value).

**Phase II:**

- To evaluate anti-obesity activity of various extracts of *Alpinia galanga* rhizomes and *Argyreia speciosa* roots in two validated animal models of diet induced obesity such as:

  - Cafeteria diet induced obesity in rats
  - Atherogenic diet induced obesity in rats
The following parameters were evaluated in both the models to assess the anti-obese potential.

- Body weight
- Food intake
- Serum glucose, lipids, GPT, GOT content
- Serum leptin content
- Liver and parametric adipose tissue weight
- Liver triglyceride content
- Lipid peroxidation
- Liver antioxidant enzymes content
- Histopathological studies of liver tissue

**Phase III:**

- To determine *in vitro* antioxidant potentials of the ethanol extracts of plant materials under study by using DPPH, Nitric oxide and Hydroxyl radical scavenging assay.
- To determine total phenolic and flavonoid content of the ethanol extracts of *Alpinia galanga* rhizomes and roots of *Argyreia speciosa*.

**Phase IV:**

- To isolate and characterize the phytoconstituents responsible for anti-obese and antioxidant properties in ethanol extracts of *Alpinia galanga* rhizomes and *Argyreia speciosa* roots by using various chromatographic methods and spectroscopic techniques.
- To elucidate the possible mechanism of anti-obese property by determining the influence of isolated compounds on pancreatic lipase enzyme activity.