4. **Aims of investigation**

The specific aims of study were;

A) Pharmacognostical study

   a. Standardisation
      1. Organoleptic analysis
      2. Microscopic analysis
      3. Chemical tests
   b. Physicochemical evaluation
      1. Moisture content
      2. Tannin content
   c. Phytochemical evaluation
      1. HPTLC analysis
      2. Qualitative HPLC analysis

B) **Pharmacological studies**

In view of multidimensional activity of plant drugs, the present study has been undertaken to elucidate the mechanism and factors involved in antidiabetic action of *Tamarindus indica* L. seed aqueous extract (TSE) in streptozotocin (STZ, 90 mg/kg I.P) induced type 2 diabetic rats.

1. To study the effects TSE on body weight, blood glucose, plasma insulin
2. To investigate the effects TSE on gastric emptying and small intestinal transit
3. To study antioxidants parameters *viz* SOD, Catalase, Glutathion in plasma samples.
4. To observe the serum lipid profile and adiponectin level.
5. To assess the effects of daily administration of TSE on Glycated hemoglobin (HbA1c), tumor necrosis factor-α (TNF-α) and serum nitric oxide.
6. To examine the effect TSE on GLUT-2 protein expression and hepatic SREBP-1c mRNA level; GLUT-4 protein expressions and muscle GLUT-4 mRNA level; and pancreatic GLP-1 mRNA level.
7. To determine effect of TSE on immunohistochemistry and DNA fragmentation assay (β-cell apoptosis) in pancreas.
8. To assess *in vitro* α-glucosidase activity and postprandial hyperglycemia.
9. To study the antihypertensive activity of TSE using DOCA-salt-induced unilaterally nephrectomised hypertensive and diabetic hypertensive rats and to substantiate possible involvement of NO and lipid in its antioxidant mechanism.