

### AIM AND OBJECTIVES

Cataract is the leading cause of blindness world over. Diabetes has been considered to be a major risk factor for cataractogenesis.

Lens opacification in cataract, either due to diabetic complications or aging, is mainly due to generation of free radicals culminating in hyperoxidant stress. Studies have shown that antioxidants and substances acting as aldose reductase inhibitors can delay the process of cataractogenesis.

Currently, with growing interest in indigenous plants as promising sources of antioxidants, various plants are being tapped for their antioxidant properties. Moreover, since ancient times many medicinal plants have been used for the treatment of diabetes and its complications. In view of this, the present study was designed with the following aim and objectives:

#### **AIM:**

To Study the Effect of Medicinal Plants on Lens Enzymes in Experimental Diabetic Cataract

### **OBJECTIVES:**

- To design an experimental model to study the process of cataractogenesis using - “Lens organ culture technique” (Model used- glucose induced cataract).
- To study the specific activity of Aldose reductase as an important enzyme for cataractogenesis in sugar induced cataract.
- To estimate Malondialdehyde (MDA) level as an index of Lipid peroxidation in the lens, as one of the initiating mechanisms involved in the pathogenesis of cataract.
- To estimate the conversion of soluble proteins into insoluble proteins in the lens, as a basic event in cataractogenesis.
- To estimate the activity of redox cycle enzymes (glutathione peroxidase & glutathione reductase) in order to assess & identify the sensitivity of these enzymes in pathophysiology of sugar induced cataract.
- To study the specific activity of SOD as an important enzyme against Superoxide radicals in lens.
- To conduct studies with certain medicinal plant extracts (eg. Agele marmelos, Emblica officinalis, Syzygium cumini & Allium sativum) in order to study:-

i) Their efficiency to scavenge reactive oxygen species in sugar induced cataract.

ii) Their effect on Aldose Reductase enzyme in sugar induced cataract.

iii) Their effect on antioxidant enzymes like SOD, Glutathione Peroxidase & Glutathione Reductase

- To conduct studies with Vitamin C, a proven antioxidant and anticataractous agent in order to compare its effects on: -

-Reactive Oxygen species,

-Aldose Reductase enzyme,

-Superoxide Dismutase,

-GSH-Rx & GSH-Px in sugar induced cataract with that of the above medicinal plants.