OBJECTIVE AND PLAN OF WORK

Objective of the study

Cataract, opacity of the lens, is the leading cause of blindness worldwide. It is estimated that there are about 12 million blind people due to cataract in India alone. Although various risk factors have been identified in the pathogenesis of senile cataract, oxidative damage to the constituents of the eye lens is considered to be one of the major mechanisms (Kanski, 2003). Cataractogenic degeneration of the lens causes oxidation of the cellular and membrane constituents. The toxic effects of reactive oxygen species (ROS) or free radicals are neutralized in the lens by both enzymatic and non-enzymatic antioxidants. In recent years, the role of alternative therapeutic approaches has become very popular to delay or counter complications such as cataract. Several studies suggest the use of medicinal plants having antioxidant potential is beneficial against cataract.

*Tamarindus indica* Linn belonging to the family Fabaceae is a large sized tree widely distributed in India. It is reported that the leaves contains rich in flavonoids, saponins and tannins. The leaves of this species are used in Indian traditional medicine for the treatment of ophthalmia and other eye infections, applied to reduce inflammatory swellings, lens opaque & tumours, etc (Krithikar and Basu, 1987).

The main objective of the present study is to screen the hydromethanolic extract of *Tamarindus indica* Linn. for its *in vitro* & *in vivo* anticataract activity against chemicals-induced cataractogenesis using goat lenses as *in vitro* & rats as *in vivo* models.

Plan of work

The work involved the following steps,

- Review & literature survey
- Collection and authentification of the leaves of *Tamarindus indica* Linn.
- Experimental protocol need for the study
- Preparation of hydromethanolic extract
- Phytochemical screening
- Induction of cataract by using in vivo (using rat models) & in vitro (using goat lens)
- Estimation of tissue end products
- Estimation of enzymatic antioxidants like superoxide dismutase, catalase, glutathione peroxidase, peroxidase and glutathione reductase and the non-enzymatic antioxidant, reduced glutathione in lens homogenate
- Evaluation of anti cataract activity by isolated plant products
- Statistical analysis.