AIMS AND OBJECTIVES

Red blood cells are one of the most susceptible biological tissues to oxidative stress due to the presence of both high concentration of polyunsaturated fatty acids (PUFA) in the membrane and the oxygen transport associated with redox active hemoglobin molecules, which are promoters of Reactive oxygen species (ROS). Due to their susceptibility to oxidation, red blood cells are often used as cellular models to investigate oxidative damage.

Our earlier work has clearly shown that aqueous bark extract of TA do possess antioxidant potential. Ischemic heart diseases (IHD), other cardiovascular conditions and hematological disorders associated with hemolysis have been reported to be associated with oxidative stress. The antioxidant activity of this aqueous bark extract may be beneficial in the maintenance of the cytoskeletal architecture of erythrocytes exposed to oxidative stress. Thus the specific objectives of the proposed study are:

1. To generate oxidative stress in goat erythrocytes by treatment with phenylhydrazine (PHZ) in vitro and study the alterations in the biomarkers of oxidative stress, antioxidant enzymes, protein profile and phospholipid asymmetry of erythrocyte membranes, activities of membrane bound enzymes and metabolic enzymes, shape, osmotic fragility and morphological alterations of the red blood cells.

2. To study the protective effects, if any, of aqueous bark extract of TA against oxidative stress induced in vitro and elucidating the underlying mechanism of such protection.