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RESEARCH PAPER

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Effect of *Rhinacanthus nasutus* extracts on the non-enzymic antioxidant status of oxidant induced goat liver slices

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The present study was carried out to evaluate the antioxidant status of three different extracts of *Rhinacanthus nasutus* leaves on the oxidant induced goat liver slices under *in vitro* conditions. The antioxidant potential of all the extracts were assessed by analysing the non-enzymic antioxidants. The extracts were also analysed for the extent of inhibition of lipid peroxidation in H_2O_2 induced goat liver slices. The results of the present study showed that the methanolic extract was found to contain highest amount of non-enzymic antioxidants followed by the aqueous extract and the chloroform extract. It is evident that *Rhinacanthus nasutus* leaf extracts offered efficient antioxidant defense in the goat liver slices, an *in vitro* model which simulates *in vivo* condition, when exposed to H_2O_2. Health benefits can be obtained from the leaves with decreased risk of disease as the leaves could prevent or protect the oxidative damage caused by environmentally benign oxidant hydrogen peroxide.

Key words : Vitamin C, Vitamin E, Vitamin A and Reduced glutathione, free radicals, Methanolic extract, Lipid Peroxidation, *Rhinacanthus nasutus*

INTRODUCTION

Natural products have served as a major source of drugs for centuries, and about half of the pharmaceuticals in use today are derived from natural products. The use of natural substances particularly those derived from plants, to control diseases is a centuries old practice that has led to the discovery of more than half of all modern pharmaceuticals. A growing worldwide interest in the use of phytopharmaceutical as complimentary or alternative medicine either to prevent or ameliorate many diseases have been noted in recent years (Krishna, 2008).

Biological compounds with antioxidant properties contributed to the protection of cells and tissues against deleterious effects of Reactive Oxygen Species (ROS) and other free radicals. Protective agents from plant origin with antiperoxidative and antioxidant properties play an important role in protecting the liver against toxicity. Traditional medicines are effective in certain disorders and are based on experience in the use of plant products in amelioration of common diseases (Jayaprakash and Chinnaswamy, 2007).

Free radicals have been implicated in the causation of several diseases such as liver cirrhosis, atherosclerosis, cancer and diabetes. The compounds that can scavenge free radicals have great potential in ameliorating these disease processes. Antioxidants thus play an important role to protect the human body against damage by Reactive Oxygen Species. An antioxidant is a molecule stable enough to donate an electron to a rampaging free radical and neutralize it, thus reducing its capacity to damage. The mechanism involves significant inhibition or delay in the oxidative process. As per biochemists and epidemiologists, antioxidant neutralizes free radicals by binding their lone pair of electrons and rendering them harmless (Shivaprasad *et al.*, 2008).

Reactive oxygen species are generated continuously in the body by both endogenous and exogenous factors like normal aerobic respiration by stimulated polymorphonuclear leucocytes macrophage and exposure to various pollutants like tobacco smoke, ionizing radiation, organic solvents, pesticides and various lipid peroxides. These species causes the cellular damage by reacting with various biomolecules such as membrane lipids, nucleic acids, proteins and enzymes (Mishra and Lavhale, 2007).

Antioxidant principles from natural resources are multi faceted in their magnitude of activities and provide enormous scope in correcting the imbalance through regular intake of proper diet. Therefore, in the recent years the interest is centered on antioxidants derived from herbal medicine in view of their medicinal benefits. Commonly available phytoantioxidants are less toxic, serving food and medicinal components have been suggested to reduce the threat of wide range of ROS and its associated diseases. (Tripathi and Kamat, 2007).