INHIBITION OF *IN VITRO* LIPID PEROXIDATION (LPO) EVOKED BY *CALOCYBE INDICA* (MILKY MUSHROOM)

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ABSTRACT :

The present study was designed with an objective to assess the inhibition of lipid peroxidation (LPO) by the aqueous extract of Calocybe indica (milky mushroom) using an invitro model of goat liver homogenate and RBC ghosts. The invitro LPO was inhibited to a good extent by the aqueous extract of milky mushroom and the extent of inhibition being higher in the RBC membrane model when compared with liver homogenate model.

Key Words : Calocybe indica, LPO

INTRODUCTION :

Fungi are an important source of medicine including antibiotics, anti-tissue rejection drugs for organ transplants, cancer drugs, and anti-inflammatory products [1]. Mushrooms are nutritionally functional food and a source of physiologically beneficial non-toxic medicines. The most significant medicinal effect of mushrooms and their metabolities is their use as adaptogens and immuno stimulants[2].

Mushroom, like other vegetables have high moisture and are basically a low calorie food with 30 calories per 100g of fresh weight. The proportion of total protein in most of the edible mushrooms varies from 2.5-3.8 on fresh weight basis. Mushrooms are useful not only as food and medicine; some are also being in bioremediation to absorb and digest dangerous substances like pesticides and industrial waste, in places where they threaten the environment[3].

In spite of tremendous advances in the modern system of medicine, there are still a large number of conditions for which suitable drugs are not available. [4] Free radical oxidative stress

has been implicated in the pathogenesis of a wide variety of clinical disorders resulting usually in deficient natural antioxidant defences[5]. Lipid per oxidation (LPO) has been identified as one of the basic reactions involved in oxygen free radical induced cellular damage [6]. In protection against the damage caused by such radicals, a group of compounds classified as antioxidants are looked upon with a view of preventing lipid oxidation, disease prevention (vitamin C, vitamin E and carotene), chemo prevention (folic acid and beta-carotene) and health protection (lycopene and ascorbate) [7].

MATERIALS AND METHODS

Preparation of goat liver homogenate

Fresh goat liver was obtained from local slaughter house, washed free of blood and fat deposits were removed if any. A 5% homogenate was prepared in ice cold TBS (Tris Buffered Saline) and used for assay. The assay procedure given by Okhowa et al., 1979[8] has been followed.

Preparation of Erythrocyte Ghosts

About 50ml of fresh venous whole blood of goat was collected into a cleaned sterile bottle and defibrinated immediately using acid-washed stones. The defibrinated blood was then transferred into sterile centrifuge tubes and spun at 3000rpm for 10min to pellet out the cells and the supernatant was discarded. The pellet of RBC's was washed in isotonic TBS, thrice successively. The washed pellet was then treated with hypotonic TBS and incubated at 37^{o}C for 1 hour for lysis to occur. The lysate was centrifuged at 5000rpm for 15-20 min at 4^{o}C. The pale pellet containing the erythrocyte ghost membranes was then suspended in 1.5ml of TBS. The assay procedure given by Dodge et al.,1963[9] has been followed.

Preparation of aqueous mushroom extract

Air dried mushroom was powdered and extracted with distilled water. The extract was concentrated and evaporated to dryness. The yield of the extract was concentrated to 10%. The dried extract suspended in distilled water and was used for the study.

RESULTS AND DISCUSSION

Mammalian cells have evolved interrelated antioxidant defense mechanisms, which minimize the injurious events that result from toxic chemicals and normal oxidative products of cellular metabolism[10].

Lipid peroxidation (LPO) has been broadly defined as the oxidative deterioration of polysaturated lipids. A number of toxic compounds are generated during this process of LPO. The in vitro LPO was inhibited to a good extent by the milky mushroom extract and the extent of inhibition being higher

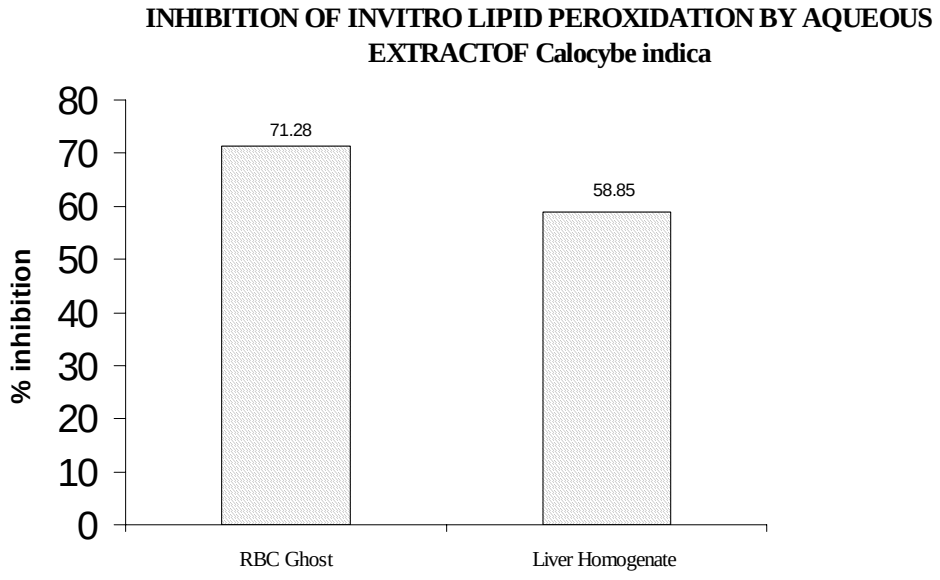
in the RBC membrane model than the liver homogenate model.

Two different model systems namely goat liver homogenate and RBC ghost (plasma membrane) were used to compare the membrane models which differ in their lipid composition.

TABLE I
EXTENT OF INHIBITION OF IN VITRO LIPID PEROXIDATION IN RBC GHOST AND GOAT LIVER HOMOGENATE BY AQUEOUS EXTRACT OF *Calocybe indica*

Sample	% of inhibition of invitro LPO	
	RBC Ghost	Liver Homogenate
Aqueous extract	71.28± 5.04	58.85 ± 1.79

Values mean ± SD in triplicates



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