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EXTRACT OF WHITE BUTTON MUSHROOM (*AGARICUS BISPORUS*) FOR BIO-MEDICINAL MOLECULES

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ABSTRACT

Agaricus bisporus (white button mushroom) is an edible mushroom known for its nutritional and bio-medicinal properties. The extract was prepared for isolation of methanolic and aqueous for *in vitro* investigation. Male albino rats 50 – 60 days old were selected to obtain blood by cardiac puncture. During the *in vitro* investigation, two extracts: Methanolic extract and Aqueous extracts separately, resulted in significantly decreased Lipid peroxidation. Effects were more significant when 0.2 ml of extract was used as compared to 0.1 ml extract for % of hemolysis 41.65 and 22.12 respectively.

Key Words: *Agaricus Bisporus, Extract, Hemolysis*

INTRODUCTION

Numerous reports have shown that mushroom and mushroom products have significant medicinal properties such as immuno-modulation, anti-cancer, anti-oxidant, blood pressure lowering, cholesterol lowering, liver protective, antifibrotic, anti-inflatory, anti-diabetic and anti-microbial activities. *Ganoderma lucidum* is the most popular medicinal mushroom in China and has been used for a wide range of health benefits, from preventive measures and maintenance of health to regulation and treatment of chronic as well as acute ailments (Chang 1995). One of the most interesting mushroom derived products is the polysaccharides which exhibit promising immuno-modulatory and anticancer effects. Numerous anti-tumour polysaccharides have been discovered from mushroom. These antitumour agents of polysaccharides nature i.e. *Lentinus*, *schizophyllan* and polysaccharides proteins complexes (PSK & PSP) were isolated from *Lentinus edodes*, *Schizophyllum commune* and *Coriolus versicolor*, respectively. Many mushrooms polysaccharides have shown antiviral activities including human viruses. The compounds extracted from *Agaricus bisporus*, *Lentinus edodes*, *Comprinus comotus* and *Oudemansiella mucida* have been reported to have antifungal and antibacterial properties. Various pharmaceutical compounds have been isolated from several mushrooms. (Buswell and Change 1993) Many species of mushrooms have been found to be highly potent immune enhancers, potentiating animal and human immunity against cancer Tyrosinase from *A. bisporus* is antioxidant (Shi *et al.*, 2002). Manpreet *et al.*, (2004) have studies on antioxidant effect of Methanolic extract and Aqueous extracts of *Pleurotus* spp.

MATERIALS AND METHODS

Extract of Agaricus Bisporus for Bio-Functional Molecules

The extract of white button mushroom (*Agaricus bisporus*) were prepared for isolation of methanolic and aqueous for *in vitro* investigation. For methanolic extract, dried powder of *Agaricus bisporus* was taken in conical flask filtered with condenser and methanol was added in the ratio of (1:10). This mixture was heated on a water bath for 4 hours and extract was filtered through Whatman No. filter paper. This extract was cooled at room temperature and then allowed to stand overnight for methanol to evaporate. For preparation of aqueous extract dried powder (5mg) of white button mushroom (*Agaricus bisporus*) was taken in mortar and saline (100 ml) was added in (1:20 ratio). This powder was mixed properly by

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shake and this mixture was filtered through muslin cloth. This filtrate was centrifuged at 3000 rpm for 10-15 minutes and supernatant was collected for investigation.

Male albino rats 50 – 60 days old were selected to obtain blood by cardiac puncture. Blood obtained was centrifuged at 3000 rpm for 15 minutes at 4 °C and plasma was separated. The erythrocytes obtained were washed three times with phosphate buffer saline (pH-7.4) after washing packed cell volume (PCV) was adjusted to 5% with normal saline. In vitro lipid peroxidation (LPO) estimation was done by determining thiobarbituric acid (TBA) reacting substance under oxidative stress by standard method of Stock and Dormandy (1971).

$$\% \text{ of Hemolysis} = \frac{\text{LOP in control} - \text{LOP in treatment}}{\text{LOP in control}} \times 100$$

RESULT AND DISCUSSION

Extract of Agaricus Bisporus for Bio-Functional Molecules

During the *in vitro* investigation (result show that from table- 1) inclusion of *Agaricus bisporus* two extract Methanolic extract and Aqueous extracts separately, resulted in significantly decreased of Lipid peroxidation. Effects were more significant when 0.2 ml of extract were used as compared to 0.1 ml extract. This investigation is confirmative with finding of Kasuga *et al.*, (1993) and Manpreet *et al.*, (2004) they reported strong antioxidant activities (on methyl linoleate) of ethanol extract of *Boletaceae* with *Suillus* species and extracts of *Pleurotus florida* and *P. sajar-caju* respectively.

Inclusion of dried powder of *Pleurotus florida* in hypocholesterolemic diets of rats have been reported to result in significant lowering of lipid, cholesterol, and triglyceride in plasma significantly with no untoward reaction as evidenced by lipid peroxidation (Khanna *et al.*, 1993, Bobek *et al.*, (1997) and Khanna *et al.*, 2000).

Inclusion of dried powder of *Agaricus bisporus* in hypocholesterolemic diets of rats have been reported to result in significant lowering of lipid, cholesterol, and triglyceride in plasma significantly with no untoward reaction as evidenced by lipid per oxidation.

Table 1: In vitro effect of two extracts of Agaricus bisporus on lipid peroxidation (LPO) and % of hemolysis of erythrocytes

Mushroom Extracts	Volume of Extract (ml)	Lipid Peroxidation (n Moles of MDA Formed/gHb/h)	% of Hemolysis*
Methanolic extract	0.1	226.3	22.12
	0.2	162.4	41.65
Aqueous extract	0.1	269.5	7.22
	0.2	247.2	14.90
Control		290.5	
SEm _±		14.67	
C.D. (P= 0.05)		33.84	

* Value in parenthesis indicates % reduction over control.
 Each observation is the average of three replications.

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