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PHYTOCHEMICAL SCREENING OF OYSTER MUSHROOM

Health Science

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ABSTRACT

Phytochemical ingredients are plant secondary metabolites which provides protection to the plants. This ingredient possesses strong antioxidants, antimicrobial, antiviral and anticancer activity in this concerns oyster mushroom also contain several chemical ingredients like alkaloids, flavonoid, saponin, phenol, carotenoid, protiens and terpenoid which are conformed by Phytochemical test. However protein alkaloid and phenol was found higher concentration as compare to saponin, steroid, flavonoid and terpenoid level noted minimum. It gives basic concepts of chemical components of mushroom for further research works.

KEYWORDS

Secondary metabolite, Chemical Screening, Mushroom.

INTRODUCTION

Oyster Mushroom commonly referred as Dhingri in India is a basidiomycetes and belong to the genus Pleurotus. It is lingnocellulolytic fungus that grows actually in the temperate and tropical forests on dead decaying wood logs and sometimes on drying trees or plant parts of deciduous or coniferous trees. It can also grow on decaying organic matter.

The Oyster Mushroom is one of the most suitable fungal organism for producing protein rich food from various agro wastes without composting. This mushroom is cultivated in about 25 countries of far-east Asia, Europe and America. The other major oyster producing countries are Japan, South Korea, Itlay and Thailand. At present India produces annually 10000 tons of this mushrooms. The mushroom are good source of essential nutrient like proteins, vitamins, fats, carbohydrates and minerals. So the present investigation deals the phytochemical screening of chemical constituents present in the Oyster mushroom.

MATERIAL AND METHODS

The fresh mushroom was taken for detailed study of phytochemical screening of alkaloids, flavonoid, saponin, proteins, phenol, and terpenoid following the method of Sinha (1980) and Mahadevan (1982).

Alkaloids:

2 gm fresh mushroom was taken and washed with distilled water. Subsequently crushed in 15 ml ethanol and filtered. The filtrate was made acidic by 1% Hydrochloric acid (HCl). After that the acidic extract was made alkaline with 28%. NH_4OH and was extracted with equal volume of chloroform. The chloroform soluble fraction was tested with Dragendorffs Mayer's and Wagnor's reagent. Any turbidity or precipitation showed the presence of alkaloid.

Steroid:

1 gm fresh mushroom sample was homogenized and extracted with petroleum ether. The ether was evaporated and to the remaining residue was added acetic anhydride and few drops of conc. H_2So_4. The pink or blue green color indicated the presence of steroid.

Flavonoid:

Ethanolic extract of fresh sample was evaporated to dryness. The residue was dissolved in concentrated hydrochloroic acid. (Conc Hcl). To the system was added Mg turning. The pink colour indicated the presence of flavonoid.

Phenol:

Sample was crushed with 80% ethanol and centrifuged. About 5ml of supernatant was tested with a mixture of equal volume of ferric chloride (0.3% in 0.4N HCl) and potassium ferricyanide (0.3%). The blue green or pink colour conformed the presence of phenol.

Protein:

100mg fresh sample of mushroom was taken and homogenized with 20ml of acetate buffer was centrifuged. The supernatant was taken. To 2ml supernatant, 10ml of alkaline copper reagent (prepared by mixing 50ml of 2% Na_2Co_3 in 0.1N NaOH solution and 1ml of 0.5% Copper sulphate in 1% sodium -potassium tartrate) was added. The solution (12 ml) was mixed thoroughly and was allowed to stand at room temperature for 10 minutes. Subsequently 1ml of folin-ciacalteu reagent (1:3 v/v) in glass distilled water was added rapidly to the above processed solution and mixed thoroughly After 30 minutes the absorbance was recorded at 600nm in colorimeter.

Saponin:

The ethanolic extract in ethanol was evaporated then dissolved in water and shake vigorously. A honey comb broth presenting for half an hour indicated the presence of saponin. Confirmatory test was done by crushing about 2gm fresh sample in chloroform and adding few drops of Conc. H_2So_4 (Concentrated Sulphuric acid) to the filterate. Subsequently 1 ml of acetic anhydride was added to 1ml of ice filterated. The presence of blue or bluish green or reddish brown colour accompanied with the formation of pink ring conformed the presence of saponin.

Terpenoid:

Salkowski test was done for terpenoid test. 2gm fresh mushroom sample was taken & crushed in ethanol. After that 5ml extract was mixed with 2ml chloroform and 3ml concentrated sulphuric acid (Conc. H_2So_4) added to form a layer in a test tube. Reddish brown coloration formation showed the presence of terpenoid in the sample.

RESULT AND DISCUSSIONS:

The results of Phytochemical screening test is tabulated in Table-1 and result reveals that conc/entration of different types of ingradients viz alkaloid, protein, steroid, phenol, flavonoid, terpenoid and saponin present in oyster mushroom. However concentration of alkaloids, protein and phenol was found higher as compare to other components like flavonoid, steroid and saponin. But terpenoid level was observed minimum. Similar Observations were also studied regarding the phytochemical screening of various ingradients by earlier investigators (Kapoor et al. 1975. Prasad et. al. 1995; Singh et al. 2014). who worked on different hosts. In this concern recently, Singh et. al (2021) also worked on chemical screening of Selaginella bryopteris medicinal plants and found similar results.

Some noteworthy workers like Emmanuel et. al. 2017, Ali ei.al (2018), Rimal et.al.(2012), Kibe et al (2017) have also worked on

phytochemical screening of different plants and also supports the findings of present investigations.

CONCLUSION:

The phytochemical screening of different plants and hosts including mushroom give the basic concepts as well as ideas regarding what types of chemical components are present in the plants and further possible scope for detail study of research investigation.

Table - 1. Chemical Screening of Oyster Mushroom.

Chemical constituents	Amount/Concentraion
Protein	+ + + + (Higher)
Alakaloid	+ + + + (Higher)
Flavonoid	+ + + (Moderate)
Terpenoid	+ + (Low/Trace)
Steroid	+ + + (Moderate)
Saponin	+ + + (Moderate)
Phenol	+ + + + (Higher)

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