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MINERAL ANALYSIS OF BRACKET FUNGUS - *HEXAGONIA TENUIS* (HOOK)

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Abstract: The present paper deals with the mineral analysis of fruiting body of fungus *Hexagonia tenuis* (Hook) - (F.Polyporaceae) conducted on Jan. 2023. The dried fruiting body was acid digested as mentioned by Toth et. al., (1948) method, minerals such as magnesium, iron, zinc, copper, manganese, etc. were estimated by Atomic Absorption Spectrophotometer (CHEMBIOTECK-CB-AAS-3510), Whereas calcium, potassium and sodium were estimated by Flame Photometer (LABTRONICS LT-671) model. The element phosphorus was estimated by Sekine et. al., (1966) method, and sulphur by Balanchar et. al., (1965) method. The fruiting body of *Hexagonia tenuis* (Hook) reveals, major amount of magnesium, sulphur, potassium, calcium and sodium contents, while copper and zinc content show less quantity but least quantity of iron and manganese contents were recorded.

Keywords: Mineral, Hexagonia tenuis, AAS, Flame Photometer

INTRODUCTION

Hexagonia tenuis (Hook) a poroid fungus belong to family Polyporacae growing in tropical region of the world. The fungus causes white rot decay on dead and decaying wood logs in forests of western ghats, commonly called as Honey comb bracket fungus, -a lignicolous fungus with thin and leathery bracket, get attached to dead and dry branches of wood (log). The fruiting body comprises a dorsal velvety with concentric zones of different shades of fawn, while ventral surface shows large number of hexagonal pores.

The fruiting body of *Hexagonia tenuis* possess, a large number of myco- compounds, such as acyl halides, esters, quinolines, ketones, phenols, carboxylic acid, alcohols, fatty acids, triterpenoids, alkenes, sterols etc. Again triterpeniods such as hexatenuin, ergosterol, ergosterol peroxide, urosolic acid, hexacosene, stellasterol, etc. were abundant, hence the fungus possess antioxidant, antimicrobial and antitumor activity,more over it also possess a thermostable enzyme called Laccase, widely used in pharmaceutical industry. So, such a important fungus with lot of utility to mankind and industry. Therefore, an attempt was made to study mineral aspect of fruiting body of fungus – *Hexagonia tenuis* (Hook)

MATERIAL AND METHODS

Fruiting body of *Hexagonia tenuis* (Hook) was collected from Lead Botanical Garden. Shivaji University, Kolhapur during monsoon months for experimental study. The collected sample were brought to the laboratory washed with distilled water; later Sun dried for 2-3 days followed by hot oven for 1-2 consecutive days with temp 50-60 degree Celsius. The dried sample were powered in domestic grinder. This fine powdered fruiting body of 500 mg were digested with tri-acid, as prescribed by Toth et. al., (1948) method. This digested sample filtered and made to 100 ml with distilled water for estimation of minerals. The minerals were estimated by Atomic Absorption Spectrophotometer (CHEMIOTECK CB-AAS-3510) model, while sodium, potassium, calcium was determined by Flame Photometer (LABTRONICSLT-671 model). The element sulphur was estimated by Balnchor et. al., (1965) method and phosphorus by Sekine et.al., (1966) method. The results were shows in terms of mg^{-1} 100^{-1} g and g^{-1} 100^{-1}g of dried tissue.

RESULTS AND DISSCUSION

The results were depicted in table no1. In general, among fungi, potassium content found to be maximum especially in mycelium and spores of fungi. The main role of potassium in fungi help to maintain the fluid level inside the cells, fragmentary data relating to effect of potassium on growth and metabolism of fungi indicate that sub-optimum level of this metal interferes with sugar utilisation (Renner felt, 1934) as well as carbohydrate metabolism (Hofmann and Scheck (1950)). The present investigation shows 1.6 gm of potassium recorded per 100 gm of dry fruiting body of *Hexagonia teunis* (Table 1). Equivalent report on a low content (0.28gm) of potassium recorded in *Ganoderma lucidum* of lignicolous fungus (Nagaraja et. al.,1987). Sodium is important metal has no significant response but 980mg of sodium content was recorded in fruiting body (table 1). Concurrently a least amount of sodium has been recorded in lignicolous fungi such as *Microsprous xanthopus* and *Ganoderma lucidum* i.e. 0.08 and 0.05gm/100g of dry tissue (Nagaraja, et.al., 1987).

Calcium its essentiality has been shown by several workers, Cochrane (1958) reported calcium required for growth. as well as perithecial production (Basu,1951). The present study reveals 1.6 gm of calcium was recorded in fruiting body of *Hexagonia tenuis* (Table 1). A parallal report of 0.3gm of calcium were recorded in *Auricularia mesentrica* - fleshy lignocolus in coloured fungus by Nagaraja (1987). Hence, a wide range of optima, extremely variable response in fungi were observed.

Magnesium role in fungal metabolism is chiefly through its activity influence over other enzyme system, again its role in oxidative metabolism of carbohydrate were shown by Sarasin, (1953) and a physiological active element by Nason et.al., (1954). A huge deposition of magnesium content was recorded 3.2g per 100g of fruiting body *Hexagonia tenuis* (table 1). Magnesium content may vary in different genera as such no uniformity. In members of F. Polyporaceae. On the contrary a disparate minute quantity of magnesium was recorded in *Auricularia Sp* .and *Ganoderma sp.*by Nagaraja (1987), Oke(1966), Patel (1980) and Patil (1985). The elements such as copper, zinc, iron and manganese found in very low amount in fruiting body (table.1) reflect its non-essentiality to the fungal metabolism.

The element zinc recognized on growth stimulating nutrient in lower concentration to fungi. Zinc produces a multitude of metabolic effects, which is believed to be due to its role as an activator or constituent of enzymes and secondary metabolites (Steen bergen and Wein bergen (1968). 0.027 mg of zinc recorded in fruiting body of *Hexagonia tenuis* (table 1).

Sulphur- nonmetal known to be essential for the biosynthesis of sulphur containing amino acids, as well as component of sulfhydryl or thiol group of many enzymes (Bhargava and Tandon (1963) shows 1.8 g/100 g of fruiting body of *Hexagonia tenuis* (Table. 1) reflects its utility in nutrition (Singh and Tandon, 1970). Similarly, phosphorus as a constituent of phospholipids, which take part in the formation of cell membrane, a part of nucleoprotein enzymes, coenzymes as well as nitrogen assimilation revels 70 mg/ 100 g of dried fruiting body of *Hexagonia tenuis* (table 1).

The elements magnesium, calcium, potassium, copper and zinc content in the fruiting body is not within acceptable range for human consumption (Kumari and Atri , 2014). Therefore, the variation may due to abiotic factors, where grow on dead log wood but all elements are essential for fungal metabolism.

Table. 1. MINERAL ANALYSIS OF BRACKET FUNGUS- HEXAGONIA *TENUIS* (Hook)

Sr. No.	Minerals	Result
1	Potassium**	1.60
2	Sodium*	980.0
3	Calcium**	1.60
4	Magnesium**	3.210
5	Iron*	0.001
6	Manganese*	0.001
7	Zinc*	0.027
8	Copper*	0.129
9	Sulphur**	1.90
10	Phosphorus*	70.0

Expressed as: *mg^{-1} 100^{-1} g of dried tissue

**g^{-1} 100^{-1}g of dried tissue

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