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MINERAL ANALYSIS OF *LENZITES BETULINA* (L) Fr– GILLED MUSHROOM

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Abstract: The current research paper deals with mineral composition of *Lenzites betulina* (L) – Gilled mushroom collected from University campus, sept 2023. The dried fruiting body was acid digested by the method of Toth et al., (1948). The elements such as manganese, iron, copper, zinc, boron were estimated by Atomic Absorption Spectrophotometer (Thermo-scientific-AAS-Chemito AA 203 model). While potassium, calcium, sodium were determined by Flame photometer (Systronics 128 model), and element phosphorus was estimated by Sekine (1965) method. The fruiting body of *Lenzities betulina* (L) reveals major amount of calcium, potassium, sodium, phosphorus contents, on the contrary iron, copper, manganese, zinc and boron were found in lesser quantities.

Keywords: Minerals, Lenzites betulina, AAS, Flame photometer.

INTRODUCTION

Many mushrooms were considered as best human food, as well as folk medicine over centuries, especially in the far East Countries, including India. Mushrooms form a huge tremendous source of active biochemical compounds with diversified chemical structures with potent sources of drug discovery. Among them is *Lenzites betulina* (L) a saprophytic fungus grown on dead wood, during monsoon season in the forest as well as on University campus, growing alone or in overlapping clusters on logs and stumps, with a cap of 8-10 cm across and 2 cm thick with bracket or kidney shaped flattened convex, without stem, radial bumpy ridged body.

Lenzites betulina (L) Fr. mushroom used as a food and medicine widely distributed in China belong to family: Polyporaceae. The mushroom contains physiologically active polysaccharides, sterols, etc. used in medicine, agriculture, food and other industries. Because of large number of phytochemicals, the fungus possess antimicrobial (Lee et al., 1996), cytotoxic activity (Ren et al., 2006), antioxidant (Wei et al., 2017), antiviral (Irinoda, et al., 1992) and antitumor (Lu and Zhang, 2018) activities, hence used as an immunomodulator. A review work of Dai Yu C et al., (2009) suggests that 200 to 331 mushroom species have anticancer activity. More than 650 species of higher members of basidiomycotina found anticancer activity (Wasser, 2002). Although *Lenzites betulina* (L) is worldwide in distribution and has no extensive

research work on it, therefore, an attempt was made to study the mineral content of the fungus- *Lenzites betulina* (L).

MATERIAL AND METHODS

The fruiting bodies of *Lenzites betulina* (L) Fr were collected from dead logs from Lead Botanical Garden, Shivaji University, Kolhapur during monsoon months in 2023 for experimental study. The Collected dried samples were brought to the laboratory washed with distilled water, blot to dry and kept in a hot oven for 1-2 consecutive days maintaining a temperature of 50-60°c. The dried samples were powdered in domestic grinder and 500 mg of sample were digested in tri-acid by the method of Toth et al., (1948). The digested sample filtered through Whatman paper no: 1 and made up to 100 ml by distilled water. The elements were estimated by the Atomic Absorption Spectrophotometer (Thermo-Scientific-AAS-Chemito AA 203 model). The elements such as potassium, calcium and sodium were estimated by Flame photometer (Systronics 128 model), and non metal phosphorus was estimated by Sekine (1965) method. The results were expressed as mg g^{-1} of dried tissue.

RESULTS AND DISCUSSION

The results were expressed in Table.1. In general, mushrooms contains maximum amount of the potassium salt, helps in osmoregulation, membrane potential adjustment, several enzyme activation, it also helps in regulation of protein synthesis. Again fungi need a sub-optimum level, which interferes the sugar utilization (Renner felt, 1934) and carbohydrate metabolism (Hofmann and Scheck, 1950). The present investigation reveals that 3.8 mg of potassium recorded per gm of dry fruiting body of *Lenzites betulina* (L). Paradoxically moderate content of potassium was documented in *Ganoderma lucidum*- a Lignicolous fungus by Nagaraja et al., (1987) and *Hexagonia tenuis* by Patil, et al. (2023).

Essentiality of element calcium in plants and fungi were shown by several workers, calcium initiates signalling cascade in the cell, plays an essential role in various processes, such as growth, development, tolerance to stress condition, virulence in fungi, reproduction as well as perithecial production in fungi (Basu, 1951). The present investigation shows 10.8 mg of calcium recorded per gm of dried fruiting body of *Lenzites betulina* (L) Table. 1. A parallel report has been recorded by Nagaraja (1987) in *Auricularia mesenterica*. Hence, a wide range of requirements in fungi has been noticed.

The metal sodium involves in electrical neutralization of inorganic and organic anions and macromolecules in fungi, pH homeostasis, regulation of cell osmotic pressure as well as turgor-driven cell and organ movements in plants and fungi with its importance. In *Lenzites betulina* (L) Table. 1. 2.3 mg of sodium content were recorded per gm of dried fruiting body. A concurrent result was published by Patil et al. (2023) in *Hexagonia tenuis* (Hook).

Zinc is a fundamental element for fungal metabolism, helping the integrity of ribosomes and biological membrane, fungal homeostasis. Zinc produces a multitude of metabolic effects, which is believed to be due to an activator of several enzymes and secondary metabolites Steen bergen and Wein bergen (1988). A negligible amount of zinc content 0.00039 mg per gm has been recorded in *Lenzites betulina* (L) (Table.1). The minerals such as copper, manganese, iron and boron found in very low concentration in fruiting body of *Lenzites betulina* (L) (Table. 1), reflects its non-essentiality to the fungal metabolism.

The non-metal phosphorus a constituent of phospholipids, found in every plant cell and in fungi, has key function in energy transfer, nutrient movement within the plant, a vital component of DNA, genetic

memory unit, is a part of nucleoprotein enzymes and coenzymes, represents a considerable amount in the *Lenzites betulina* (L) (Table.1) fruiting body - 0.6 mg of phosphorus per gm of body reflects its essentiality in fungal metabolism. The presence of elements such as sodium, zinc, copper, iron and boron in the fruiting body of *Lenzites betulina* (L) are not within acceptable range for human consumption (Kumari and Atri, 2014). Hence variation in mineral content may be due to abiotic and biotic factors, where they grow on dead log wood and essential for its metabolism.

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Table. 1. MINERAL NUTRIENTS IN *LENZITES BETULINA* (L).

Sr. No.	Minerals	Content*
1	Potassium	03.8
2	Calcium	10.8
3	Sodium	02.3
4	Zinc	0.00039
5	Iron	0.00069
6	Copper	0.00019
7	Manganese	0.00034
8	Boron	0.00205
9	Phosphorus	0.6

*Expressed as mg g-1 of dried tissue

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