

Mycelia Biomass Yield of *Ganoderma Lucidum* Mushroom by Submerged Culture

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Abstract

Biomass yield of G. lucidum in submerged culture was investigated on account of its requirements for sources of carbon, nitrogen and the carbon: nitrogen (C:N) ratio. The study was carried out with the culture medium of potato dextrose broth enriched with the different carbon (glucose, maltose, starch) and nitrogen (aspartic acid, nitrogen nitrate, peptone) sources over a period of 15 days following standard procedures. The highest biomass of 460±89mg was recorded in the broth medium incorporated with maltose which is significantly different ($p<0.05$) from that of glucose, 310±89mg, and lactose, 250±50mg. There was no growth on starch (0.00±0.000mg) while the control recorded 114±20mg. The highest biomass of 200±39mg among the nitrogen sources was recorded in the medium incorporated with aspartic acid which is also significantly different ($p<0.05$) from that of peptone, nitrogen nitrate and the control. A carbon: nitrogen (C:N) ratio (i.e. maltose : aspartic acid) source of 2:2 supported the highest biomass when compared to other carbon : nitrogen ratios. It was therefore deduced, that the presence of maltose as a source of carbon and aspartic acid as a source of nitrogen respectively favoured a good growth of G. lucidum when supplied in a definite amount and ratio. The implications and reasons for these results were highlighted and discussed. It was concluded therefore, that various carbon and nitrogen sources and certain carbon: nitrogen (C:N) ratio have effect on the biomass yield of G. lucidum grown in Potato dextrose broth medium. The findings of this study will be an addition to the baseline information for the growth of the mushroom in submerged cultures for its pharmacological and medicinal potentials.

Keywords: Nitrogen source, Carbon source, Biomass, *Ganoderma lucidum*, Broth medium

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