PHYSIOLOGICAL STUDIES OF A MORPHOLOGICAL MUTANT OF *SCHIZOPHYLLUM COMMUNE*

BY

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SUMMARY

Some *in vivo* physiological characteristics of the *Puff* mutant of *Schizophyllum commune* were investigated. Studies of the pH, dry weight, glucose uptake, and viable count growth kinetics indicate that maximum developement in liquid culture occurs by three days.

Under the conditions employed, it was determined that no paramorphogen is produced by the *Puff* mutant in liquid culture. The *Puff* mutant was qualitatively found to be capable of growth in conditions of reduced oxygen tension, thus confirming the results of other workers.

Electron microscopic studies revealed two types of storage material in the *Puff* mutant. Numerous small electron-transparent storage bodies are present al all ages, while numerous large electron-dense storage bodies are present only in older cultures. The small transparent bodies are thought to be carbohydrate reserve; the large dense bodies are thought to be lipid material.

Endogenous and glucose Q_{O_2} values were found to decrease with culture age. Glucose was capable of greatly stimulating oxygen uptake. Other sugars showed no pattern of varying stimulatory activity with culture age. Amino acids, though unable to stimulate young cultures, caused large percentage increases in oxygen uptake in older cultures. Statistical analyses indicate that these increases are significant. Cell-free enzyme assays and sensitivity of amino acid respiration to azide indicated that amino acid oxidation was not due to a single-step amino acid oxidase or deaminase.

Data are presented to supported an hypothesis that the stimulatory amino acids undergo complete degradation and serve as carbon and energy and/or nitrogen sources in starved eight-day cultures.

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