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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 development 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 at 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.

TABLE OF CONTENTS

Section	Page
INTRODUCTION	1
MATERIALS AND METHODS	8
Fungal Strains	8
Culture Conditions	8
Growth Kinetics	9
Preparation of Cultures For Respirometry	10
Respirometry	11
Substrates and Inhibitors	12
D-amino Acids	12
Sources	12
Preparation of Cell-free Extracts	13
Enzyme Assay	13
Ammonium Nitrogen Assay	14
Nitrogen Uptake	15
Electron Microscopy	15
RESULTS	16
Morphology in Liquid Culture	16
Growth Kinetics	17
Qualitative Growth Experiments	17
Respiratory Studies	19
Respiratory Effects of Sugars	19
Respiratory Effects of Amino Acids	20
Enzyme Assay	22
Effect of Respiratory Inhibitor	23
Ammonia Metabolism	24
DISCUSSION	26

Section

Page

LITERATURE CITED

40

TABLES

FIGURES

SUMMARY

VITAE