OPTIMIZATION OF GROWTH CONDITIONS OF THE WILD-TYPE AND MUTANT STRAINS OF THE PLEUROMUTILIN-PRODUCING *Clitopilus passeckerianus* (PILÁT) SING. NRRL 3100

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Abstract

The most suitable substrates for the growth of C. passeckerianus wild-type and mutant strain HP76 were found to be similar for both strains based on the extent of mycelial growth. Mycological agar (MA) was selected as a suitable agar medium while wheat bran was determined to be a suitable supplement for mycelial growth. Vegetative growth was also most vigorous on sawdust compared to the other solid substrates tested. The optimum physical conditions, in terms of temperature and lighting condition, were also similar for both strains when grown on wheat bran-supplemented sorghum grains. Air-conditioned temperature (24°C) was found to support better growth in both strains compared to room temperature (29-30°C). Lighting condition did not affect mycelial growth. Hyphal strands were the only structures noted in the growth of the wild type and HP76 when microscopically observed for five weeks. Oidia formation was observed on two other mutant strains, LP1 and LP2, grown using previously selected substrates and conditions.

Introduction

Pleuromutilin is an antibiotic produced by several species of the genus *Pleurotus*, by *Clitopilus passeckerianus* and *Drosophila subatrata* (Kavanagh *et al.*, 1951). Its activity is mainly against penicillin- and streptomycin resistant staphylococci and strains of *Streptococcus*, *Enterococcus*, *Bacillus subtilis*, *Escherichia coli*, *Eberthella typhi* and *Vibrio cholerae*.

C. passeckerianus is a therapeutically significant basidiomycete in that it produces pleuromutilin through fermentation (Knauseder and Brandl, 1975). Through mutagenesis by N-methyl-N'-nitro-N-nitrosoguanidine, high-yielding mutants were obtained (Papa, 1999); on the other hand, treatment with acridine-orange resulted in the emergence of low-producing mutants (Raymundo *et al.*, 1998).

The fungus is used for antibiotic production in its vegetative form (Papa, 1999). Mycelial growth optimization is significant to the ensuing fruiting and basidiospore formation, which can contribute to the easy and effective handling and storage of the fungus. Fruit body formation can also pave the way for investigations into the presence or production of antimicrobial compounds in basidiocarp tissues.

This study was conducted to determine the most suitable substrate and physical conditions for mycelial growth of the *C. passeckerianus* wild-type and high producing mutant strain HP 76; to compare, microscopically, the mycelia of the two *C. passeckerianus* strains; and to compare the growth of low-producing *C. passeckerianus* mutants LP1 and LP2 with that of the wild-type and HP76 strains using selected substrates and physical conditions.