Fungal Genetics Reports

Volume 11 Article 10

Estimation of the frequency of multinucleate conidia in microconidiating strains

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Abstract

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Baylis, J. R., Jr. and A. G. DeBusk. Estimation of the frequency of multinucleate conidia in microconidiating strains.

Frequency of multinucleate microconidia.

Experiment Number	1	2	3
ad-3 colonies x 10^4 per ml conidiol suspension	7.42	6.40	76.00
lyr-3 colonies x 10^4 per ml conidial suspension	37.00	358.00	3.8
Ratio ad-3 colonies/ lys-3 colonies	1/5	1/56	20/1
Total viable conidia x 10^4 per ml conidiol suspension	44.42	364.40	79.0
Wild type colonies per ml conidial suspension	83	53	19
Frequency @colonies	0.836	0.982	0.048
Frequency ad-3 colonies	0.166	0.017	0.952
Per cent wild type colonies	0.0187	0.0014	0.0024
Estimated per cent multinucleate microconidia*	0.067	0.041	0.026

* This value is obtained from the following equation:

$$\frac{\%\ \text{wild type colonies}}{2(\text{lys-3 colony frequency})\ (\text{ad-3 colony frequency})}.$$

The frequency of multinucleate conicia in microconidiating strains of N. crassa was determined by means of a technique employing forced heterocaryons. The strains used were of the following genotypes: ad-3A; pe, fl (38701; Y8743m,L) and lys-3; pe, fl (4545; Y8743m, L).

Heterocaryons were formed by placing drops of a mixed microconidiol suspension on plater of minimal medium. The heterocaryons formed on the plates were transferred to minimal agar slants and incubated. Microconidial suspensions from three independent heterocaryons were analyzed. Each was filtered through Nitex f53 mesh and gloss wool to remove conidiol clumps and mycelial fragments. Aliquots of the filtered suspension were plated on minimal, adenine-supplemented, and lysine-supplemented medium. From the plate counts and by application of the binomial theorem the frequency of multinucleate conidio was determined (Table). To simplify the calculations, all multinucleate microconidio ore considered binucleate. The frequency of multinucleate microconidia varied little over a wide range of nuclear ratios. These percentages probably represent the upper limits of multinucleate microconidial frequencies since an undetermined fraction of the wild type colonies formed may have hod their origin as multinucleate mycelial fragments or as newly-formed heterocaryons. The percentages of multinucleate microconidia obtained were less than 0.1% in all cases, and therefore somewhat lower than those reported by Barratt and Garnjobst (1949 Genetics 34: 351).

This work was supported in part by Atomic Energy Commission Contract AT-(40-1)-2788. • • • Genetics Laboratories, Deportment of Biological Sciences, Florida State University, Tallahassee, Florida.