Fungal Genetics Reports

Volume 18 Article 21

Phosphorous content and rhythmic growth

G. Lysek
Botonírches Institut der TUM

T. Bornefeld
Botonírches Institut der TUM

Recommended Citation
Lysek, G., and T. Bornefeld (1971) "Phosphorous content and rhythmic growth," *Fungal Genetics Reports*: Vol. 18, Article 21. https://doi.org/10.4148/1941-4765.1900

Phosphorous content and rhythmic growth

Abstract

Phosphorous content and rhythmic growth

Lysek, G. and T. Bornefeld. Phosphorous content of wild type and 'clock" mutants of Podospora anserina.

The study of the metabolism of rhythmicoily growing strains of P. anserina hod shown that this growth pattern is associated with an enhanced catabolism of substrates (e.g., carbohydrates), re- resulting in a reduced production of total dry weight (Lysek and Esser 1971 Arch. Mikrobiol. 75: 360). An investigation of the metabolism of phosphorylated sugars has been started by determining the phosphorous content of the wild strain and of the rhythmically growing mutants circulosa, undulata and zonata.

The mycelia were cultured at 28°C in 100 ml Erlenmeyer flasks containing 25 ml of a 1.5% solution of molt extract. The hyphoe were harvested by filtration: dry weight and phosphorous content were then measured (Martland ond Robison 1926 Biochem. J. 20:848)

Table 1. Dry weight and phosphorous content of wild type and clock mutants of P. anserina.

Strain	P-content µM P/mg dry wt.	dry weight mg/g molt extract
wild type	0.257 + 0.003	164.2 + 5.25
circulosa	0.290 + 0.015	103.0 + 2.88
undulata	0.288 + 0.008	89.5 + 2.80
zonata	0.466 + 0.008	37.4 + 1.01

The data presented in Table 1 show that the mutants circulosa and undulata hove a slightly higher content of phosphorous than does the wild type strain. (The difference is not highly significant but is reproducible.) These strains exhibit a slower increase in dry weight than does the wild type. The mutant zonata, which contains the highest levels of phosphorous, produces the smallest amounts of dry weigh+. In addition, this strain differs more conspicuously from the wild strain in terms of pigmentation, hyphol morphology, reproduction, etc. (Esser 1969 Neurospora Newsl. 15: 27). The parallelism between phosphorous content and the changer in there properties lends some support to our hypothesis that changes in the metabolism of phosphorylated compounds may be involved in the generation of rhythmic growth patterns.

This research was supported by the Deutsche Forschungsgemeinschaft, Bonn-Bad-Godesberg, Germany.

- - - Botanisches Institut der TUM, 805 Freising Weihenstephan, Germany (G. L.) and Botonirches Institut 1 der Universität W&burg, Germany (T.B.).