

## Effect of biotin on lipid content of *Neurospora crassa*

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## Effect of biotin on lipid content of *Neurospora crassa*

### Abstract

Effect of biotin on lipid content

Neumann, W. and H. Aurich, Effect of biotin on lipid content of Neurospora crassa.

al. 1967 Acta Biol. Med. Ger. 19:221), we also studied the lipid content with the method of Heide (1929 Arch. Mikrobiol. 10: 355), the content of cell wall substances with the method of Owens et al. (1958 Contrib. Boyce Thompson Inst. 19: 355), the amount of hexosamine in the cell wall with the method of Tmcey (1952 Biochem. J. 52: 265) and the ash content, all in relation to the concentration of biotin in the culture medium.

N. crassa 3a6A was incubated at 30°C for 3 days in the medium of Ryan et al. (1943 Am. J. Botany 30: 784), washed, dried at 80°C in small portions and ground to a powder. Table 1 shows the dependency of growth (in mg of dried mycelium per 40 ml of culture medium) on the biotin concentration in the culture medium, as well as the relative amounts of lipids, cell wall, hexosamines and ash in the dried mycelia. Only the lipid content showed well defined changes and continuously rose with increasing biotin concentration. Between lipid content and log biotin concentration there was a significant linear correlation (correlation coefficient 0.79:

P 0.001). The cell wall, its chitin component

(measured as hexosamines), and the ash content did not change on addition of biotin. The decrease in protein, nucleic acids and lipids in biotin deficient mycelia goes together with an increase of an unknown fraction which increases from about 15% (5 µg biotin/l) up to about 25% (0.05 µg biotin/l). The main substance of this fraction is probably glycogen, which is deposited to a large extent in biotin deficiency. ■ ■ ■ Institute of Physiological Chemistry, Karl Marx University, Leipzig, Germany.

There are only a few experimental studies dealing with the interrelationships between lipid synthesis and biotin deficiency in Neurospora. As we had found in N. crassa 3a6A (FGSC#955) a significant decrease in nucleic acids and proteins induced by biotin deficiency (Aurich et al. 1967 Acta Biol. Med. Ger. 19:221), we also studied the lipid content with the method of Heide (1929 Arch. Mikrobiol. 10: 355), the content of cell wall substances with the method of Owens et al. (1958 Contrib. Boyce Thompson Inst. 19: 355), the amount of hexosamine in the cell wall with the method of Tmcey (1952 Biochem. J. 52: 265) and the ash content, all in relation to the concentration of biotin in the culture medium.

Table 1. Growth and relative content of several constituents of N. crassa mycelium in relation to biotin concentration of growth medium.

Biotin (µg/l)	Dry weight of mycelium (mg)	Lipids ( % )	Cell wall ( % )	Hexosamine ( % )	Ash ( % )
0.05	36	4.1	29	1.9	5.1
0.1	46	5.0	29	1.7	5.2
0.3	60	5.8	28	1.7	5.3
0.7	73	6.6	27	1.8	5.2
1.0	81	7.1	27	1.8	5.4
5.0	98	8.5	28	1.9	5.2