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Growth temperature and permeability  
of Neurospora crassa

Whereas fungi are very efficient at accumulating compounds from the medium by active transport, compounds lacking transport mechanisms often show very low permeability. Consequently, nontransported growth supplements, antibiotics and other potential effectors may be ineffective in fungi.

In Neurospora actinomycin D has been found by Totten and Howe (1971, Biochem. Genet. 5:521-532) to be much more effective when used in cultures grown at elevated (30-35°) temperature than when used in cultures grown at 25°. Similarly, exogenous cyclic AMP is much more effective in stimulating cyclic AMP-regulated processes in cultures grown at elevated temperatures (30-37°) than in cultures grown at lower (25°) temperatures (Dumbrova and Pall, 1987, Biochem. Biophys. Acta 926:331-338). These results suggest that Neurospora is more permeable to both of those agents when grown at elevated temperatures. Consequently, growth at elevated temperatures may be a useful stratagem for experiments attempting to overcome low permeability of Neurospora to exogenous compounds. (Supported by NIH grant GM24368). - - - Programs in Genetics and Cell Biology and Biochemistry/Biophysics, Washington State University, Pullman, WA 99164-4350.