

AN EFFECT OF GROWTH TEMPERATURE ON THE
UTILIZATION OF TRYPTOPHAN BY NEUROSPORA CRASSA

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Studies on the physiological control of the tryptophan-anthranilic acid cycle in N. crassa revealed an effect of temperature upon the efficiency of utilization of tryptophan for the synthesis of protein. In media with limiting tryptophan, mutants blocked after anthranilic acid gave considerably less growth when cultured at 23° than when cultured at 33°. Mutants blocked before anthranilic acid gave nearly equal amounts of growth at either temperature. Isotope experiments ruled out the possibility that altered rates of flow of tryptophan through certain reactions of the tryptophan cycle were causing the observed effects. Subsequent investigation revealed that a small but significant quantity of indole-three-pyruvic acid was accumulated in filtrates of cultures grown at the higher temperature and that this compound supported growth of tryptophanless strains. Studies with cell-free extracts indicated that the interconversion of tryptophan and indole-three-pyruvic acid was catalyzed by a nonspecific transaminase. The effects of growth temperature upon the apparent efficiency of utilization of tryptophan by N. crassa are mediated by the presence or absence of indole-three-pyruvic acid in the growth filtrate at the time of disappearance of tryptophan.

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