Jho, K. K. Indole excretion by revertonts derived from indole-accumulating tryp-3 (td) mutants.

Indole is known to be excreted by many tryp-3 mutants. Accumulation of indole in the medium is a consequence of the ability of the mutont protein to carry out the reaction: indole glycerol phosphates indole + triose phosphote (DeMoss and Bonner 1959 Proc. Natl. Acad. Sci. U. S. 45: 1405).

It seems that at least some of the prototrophic strains (assumed to be revertonts because of their wild-type rote of growth) derived from indole-accumulating tryp-3 mutants also accumulate indole in the medium. A large number of phenotypic revertants from three tryp-3 mutants (td-22, td-71 and WA-100) were isolated from UV-treated conidio by plating them on indole-supplemented minimal medium The object was to isolate, if possible, some strains which were still auxotrophic but could grow on either indole- or tryptophan-supplemented medium. Though such strains were not found, it was noticed that most of the prototrophic strains accumulated indole in the medium. The indole-accumulating revertants were four to seven times more frequent than the non-accumulating ones. Indole accumulation by a majority of isolates was expected because of the multinucleate, heterocaryotic nature of the conidio which gave rise to these strains. But the possibility was considered that the accumulation of indole was on inherent characteristic of the revertant nuclei.

Two of the indole-accumulating, fat-growing isolates (to avoid possible suppressed strains) were crossed to the closely-linked marker "fluffy" strain. Conidial, non-fluffy random ascospore isolates from each cross were found to contain both auxotrophs and prototrophs (23 prototrophs among 60 conidiol isolates in one case and 76 prototrophs among 92 isolates in the second cross). In both cores, with the exception of four isolates in the second cross (out of 75 isolates), all of the prototrophic, conidial isolates were found to accumulate indole in the culture medium; the four non-accumulating isolates could, presumably, represent cross-over products between the tryp-3 and fl loci. Accumulation of indole by the isolates was quantitatively comparable to that of their parent auxotrophs.

These results indicate that the enzyme tryptophan synthetase in these revertants may be different from the wild-type enzyme. DeMoss (1962 Biochem. Biophys. Acta 62: 279) has shown that the wild-type enzyme does not permit accumulation of free indole in the synthesis of tryptophan from indoleglycerol phosphate. Esser et al. (1960 Z. Vererbungslehre 91: 219) have shown that about half of the revertonts from the indole-accumulating strain td-2 had a tryptophan synthetase which could be distinguished from the wild-type enzyme by enzymatic and immunologic criteria. It was not reported whether or not some of the revertants accumulated indole.

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