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Improved techniques for study of caratenoid intermediates

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Abstract

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Subden R.E. and G. Turian. Improved techniques for study of carotenoid intermediates in Neurospora.

Previous studies of Neurospora carotenoids have been hampered by low total carotenoid yields (0.08 ▪ 1% of dry weigh+) or by a distribution of intermediate pool sizes which favored the end product; e.g., neurosporaxanthin accounts for up to 90% of the total carotenoid fraction.

Enhanced intermediate pool sizes have been obtained by using neurosporaxanthin-less or yellow "albino" strains; e.g., ylo-1 or ylo-b, ALS-4, ALS-23. There strains have 55-75% of the total carotenoid fraction yields of the wild type strains, mostly in the form of the early precursor pools (phytofluene, ıı-carotene, neurosporene, etc.).

Huang (1964 Genetics 49:453) and Harding (1968 Neurospora Newsl. 13: 8) reported yield improvements by culturing in the dark in liquid medium for 5 days and then draining off the medium and exposing the spread-out mycelial mot to intense fluorescent light for 1 to 24 hours. Cold treatments (6 hrs. at 7°C) a so seem to improve yield?, but as yet no quantitative data are available.

Using the above techniques, it has been possible to obtain a yield of 1.8% (total carotenoid fraction/dry weight of mycelium) and isolate short-lived intermediates. ß-zeacarotene has already been identified as a component of the Neurospora carotenoid fraction using this technique, which war developed in conjunction with a genetic study attempting to define the specific biosynthetic lesions caused by the "albino" gene cluster alleles. - - - Laboratory of General Microbiology, University of Geneva, Geneva, Switzerland.