CATALASE activity in carotenoid-deficient corn under illumination has been reported to be lower than catalase activity in illuminated normal corn. In the dark, the catalase activity of mutant and normal corn was equal (7).

Photosynthetic plants capable of surviving in nature contain both carotenoids and chlorophyll (9, 15). Kohl (10) suggested many years ago that carotenoids protect chlorophyll from photodestruction. Evidence for such a role of carotenoids has been accumulated with photosynthetic bacteria (6, 8), algae (1, 5, 14), and higher plants (2). Other forms of life commonly exposed to direct sunlight also contain carotenoids, melanins and related pigments.

These observations suggest that carotenoids may function to protect various plant constituents from photodestruction. In this paper, retention of catalase activity in normally pigmented material and loss of catalase activity in carotenoid deficient material is reported.

MATERIALS AND METHODS

Experiments were conducted with three sources: 1) Seedlings of corn (Zea mays L.), (W3); 2) Sarcina lutea, a bacterium, (mutant and wild strains); and 3) crystalline catalase from beef liver (Nutritional Biochemicals, Inc.). The corn mutant forms chlorophyll rapidly in light above 500 ft.-c. The wild strain of S. lutea forms no colored carotenoids are formed. The chlorophyll in light above 500 ft.-c. The wild strain of S. lutea forms no colored carotenoids are formed. The chlorophyll in light above 500 ft.-c. The wild strain of S. lutea forms no colored carotenoids are formed.

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