

1. Auxin relations in dwarf coleoptiles.

While conducting a survey of the amounts of diffusible auxin that can be obtained from dwarf seedlings, an interesting "inactivation" effect has been observed from some of the mutant coleoptiles. This effect appears to be present in some dwarfs that are small at maturity. The dwarf-1 gene does not produce this effect.

Seedlings are grown in an "avena chamber" and the coleoptiles from 5 day old plants assayed for diffusible auxin. Routinely, six 3 mm. coleoptile tips are placed on moist filter paper for one hour and then transferred to an agar block for 6 additional hours. The amount of diffusible auxin that accumulates in this block is assayed by the standard avena test.

In a typical experiment with a chromosome 9 dwarf mutant (dwarf 8201 CIT) 6 dwarf coleoptile tips gave 5.1° curvature, 6 normal tips 21.9° curvature. However, when 6 dwarf tips and 6 normal tips were placed on the same block for 6 hours, and the block then assayed for diffusible auxin, less than 5° curvature resulted. In addition, dwarf tips will also negate the curvature produced from a block of agar containing indoleacetic acid. These results suggest the presence of a "diffusible inactivator" in the dwarf tips that in some way negates both the curvature expected from diffusates of normal tips and the curvature expected from an agar block containing IAA.

In contrast, working with an allele to dwarf-1 (dwarf 6016 CIT), dwarf coleoptiles gave 13.4° curvature, normal coleoptiles 26.6° curvature. When both normal and dwarf coleoptiles were placed on the same agar block, the curvature was in excess of that obtained from normals alone. Dwarf-1 coleoptiles placed on a block of agar containing a known amount of indoleacetic acid resulted in a curvature in excess of that found from an agar block containing IAA only.

Bernard Phinney
Mary Ritzel