The fruit-bodies that had been inhibited by polyoxin D were considerably softened, and appeared very similar to fruit-bodies that had been incubated overnight with cell-wall-hydrolytic enzymes (e.g. chitinase, EC 3.2.1.14, or laminarinase, EC 3.2.1.6). This softening was not observed with the other metabolic inhibitors mentioned above. It is suggested that polyoxin D interrupts concomitant enzymic wall loosening and cell-wall synthesis during morphogenesis by specifically inhibiting the synthesis.

I thank Dr. S. Suzuki for a gift of polyoxin D, Mr. J. Baker for technical assistance, and the Agricultural Research Council for financial support (Grant no. AG43/54 to Professor J. H. Burnett).

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Inhibition of Electron Transport in Isolated Turnip (*Brassica napus*) Mitochondria by Inhibitors of Protein Synthesis

By ANTHONY L. MOORE and S. BRIAN WILSON
(Department of Biochemistry, University of Aberdeen, Marischal College, Aberdeen AB9 1AS, U.K.)

The concept of autonomy of subcellular organelles relies largely on the results of experiments in which inhibitors are used to differentiate between cytoplasmic and organelle protein synthesis. The interpretation of these experiments or those obtained with whole cells and cell homogenates is dependent on the specificity of the inhibitor chosen. Published evidence suggests that this specificity is lacking for some inhibitors of protein synthesis. Thus D-serine (a competitive inhibitor of L-serine) and cycloheximide inhibit ion uptake but not O₂ uptake by plant tissues (Ellis *et al.*, 1964; Macdonald & Ellis, 1969; Ellis & Macdonald, 1970), suggesting an uncoupling action. Chloramphenicol has been shown to inhibit ox heart mitochondria at the level of phosphorylation site I when NAD-linked substrates were being oxidized (Freeman & Haldar, 1967). Ca²⁺ uptake by isolated maize mitochondria is also inhibited by chloramphenicol (Stoner *et al.*, 1964).

The present study describes the effects on tightly coupled turnip mitochondria of a range of protein-synthesis inhibitors. Lincomycin, puromycin, mitomycin C, actinomycin D and D-serine had no significant effect, at concentrations that inhibit protein synthesis, on electron transport in either State 3 or State 4 with malate or succinate as substrate. Cycloheximide (4 µM) caused a 20% inhibition of O₂ uptake

in State 3 with malate but not with succinate as substrate, indicating action in the region of site I. No uncoupling action was observed with any of the inhibitors during the relatively short incubations used in these experiments.

D-threo-Chloramphenicol was, however, a potent inhibitor of electron transport, but, contrary to previous reports, inhibition of phosphorylation was minimal. Inhibition was greatest with malate as substrate in State 3. The effects on State 4 in the absence of uncouplers and on succinate and NADH oxidations were less marked. L-threo-Chloramphenicol, which is inactive on protein synthesis (Rendi & Ochoa, 1962), was a more effective electron-transport inhibitor than the D-threo-isomer. D- and L-erythro-Chloramphenicol were relatively ineffective inhibitors of electron transport.

Oxidized–reduced difference spectra, obtained at –196°C 5 and 15s after the addition of D-threo-chloramphenicol to 330 µM, support the conclusion that the inhibitor has two sites of action on the electron-transport chain: a sensitive site in the region of site I, and one associated with the antimycin A-sensitive site.

The authors are grateful to Dr. R. J. Ellis of the University of Warwick for the gift of chloramphenicol isomers. This work was supported by a grant from the Science Research Council to S. B. W.

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The Enzymic Hydrolysis of Malonated Flavone Glycosides

By HAROLD E. DAVENPORT and M. SUSAN DUPONT
(Agricultural Research Council Food Research Institute, Colney Lane, Norwich NOR 70F, U.K.)

Apiin (apigenin 7-apiosyl glucoside), the most abundant glycoside of parsley (*Petroselinum hortense*), may, with the less abundant graveobioside B (chrysoeriol 7-apiosyl glucoside), account for 7% of the dry weight of the leaf (Hahlbrock & Wellmann, 1970). Crude 'apiin', now known to be principally a mixture of the above glycosides, was first observed as a gelatinous precipitate formed when hot-water extracts of parsley leaves are cooled (Rump, 1836; cited by Hudson, 1949). This relative insolubility of the major glycoside constituents of parsley in aqueous