cells (Bitensky, 1963). 'Freely available' naphthylamidase activity was measured by microdensitometry of the coloured end product (Chayen, Bitensky & Poulter, 1970) in this region of the retina. Total naphthylamidase activity was taken as the maximum activity in unit time with or without various periods of pretreatment in 0.1M-acetate buffer, pH 5.0, at 37°C. The 'freely available to total' ratio was taken as an indication of lysosomal membrane stability.

At 1 week there was little difference in the acid phosphatase reaction. At this age the naphthylamidase reaction showed the lysosomes to be fully permeable in 'dystrophic' eyes but normal retinas (three out of four) required acid pretreatment to disclose full activity. In 2 week-old animals this difference was more marked and was confirmed by the results with acid phosphatase. This difference in stability of the lysosomal membrane in the pigment epithelium was found consistently, by both tests, in 6- and 9-week-old animals.

It seems probable therefore that a defect of lysosomal membranes precedes histological degeneration in this condition. This would accord with the previous observation (Reading, 1966) that an abnormal local concentration of retinol occurs in the pigment epithelium at 12 days of age, as a result of an anomalous visual-cycle mechanism.

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Some Studies on the Biosynthesis of Tocochromanols

By I. R. PEAKE, B. G. AUDLEY and J. F. PENNOCK.
(Department of Biochemistry, University of Liverpool, Liverpool L69 3BX, U.K., and The National Rubber Producers' Research Association, Welwyn Garden City, Herts., U.K.)

Rubber latex contains 8-methyl-, 7,8-dimethyl- and 5,7,8-trimethyl-tocotrienol (δT_3 , γT_3 and αT_3 respectively) together with α -tocopherol (αT), and the biosynthetic pathway $\delta T_3 \rightarrow \gamma T_3 \rightarrow \alpha T_3 \rightarrow \alpha T$ is indicated (Dunphy, Whittle, Pennock & Morton, 1965). Plant leaves on the other hand have predominantly αT , with smaller amounts of γT and

occasionally δT but no tocotrienols. Since methionine is incorporated into α - and γ - but not δ -tocochromanol (Whittle, Audley & Pennock, 1967; Threlfall, Whistance & Goodwin, 1968) and [β - ^{14}C]tyrosine is incorporated into all tocochromanols it has been proposed that homogentisate supplies the aromatic ring and 8-methyl group of tocochromanols (Whistance & Threlfall, 1967). *p*-Hydroxyphenylpyruvate has been shown to be a precursor of tocochromanols in latex and leaves of *Hevea brasiliensis*, as is homogentisate also.

Hevea leaves were incubated with [U - ^{14}C]homogentisate (1 μ Ci) and radioactivity was detected in αT (1680 c.p.m.), γT (13160 c.p.m.) and δT (440 c.p.m.), and in a similar experiment with *p*-hydroxy[U - ^{14}C]phenylpyruvate (3.9 μ Ci) the radioactivities were αT (4900 c.p.m.), γT (19800 c.p.m.) and δT (800 c.p.m.). The amounts of tocopherols present in the leaves were in the ratio αT : γT : δT , 4:2:1 and it is apparent that γT could be a precursor of αT but δT is not a precursor of γT , which agrees with the data of Threlfall & Whistance (1968).

With a cell-free system such as latex the incorporations were much lower but from homogentisate (1.1 μ Ci) radioactivity was found in αT_3 (160 c.p.m.), γT_3 (630 c.p.m.) and δT_3 (450 c.p.m.) with a small amount in αT , and from *p*-hydroxyphenylpyruvate αT_3 (45 c.p.m.), γT_3 (1020 c.p.m.) and δT_3 (400 c.p.m.), again with a trace in αT . Latex contains relatively huge amounts of γT_3 and thus specific radioactivities mean very little, but clearly the results may be consistent with the pathway $\delta T_3 \rightarrow \gamma T_3 \rightarrow \alpha T_3 \rightarrow \alpha T$.

Thus although sequential methylation of tocotrienols is likely in latex a similar tocopherol sequence is unlikely in leaves.

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