

Time-resolved fluorescence of chloroplast fragments at low temperatures

R.A. AVARMAA and R.P. TAMKIVI

Institute of Physics, Estonian S.S.R. Academy of Sciences, 202400 Tartu (U.S.S.R.)

S.M. KOCHUBEY

Institute of Plant Physiology, Ukrainian S.S.R. Academy of Sciences, 252127 Kiev (U.S.S.R.)

Low temperature (5 - 80 K) fluorescence decay curves of chloroplasts and their fragments enriched in photosystems I and II were measured at weak excitation densities. The excitation energy transfer from light-harvesting chlorophylls to the reaction centres was monitored by the wavelength dependence of the fluorescence decay times at different temperatures.

From thymine dimer to monomer by light

G. PERICHET, P. MEALLIER and B. POUYET

Laboratoires de Photochimie, Université Claude Bernard Lyon I, 43 Boulevard du 11 Novembre 1918, 69622 Villeurbanne Cédex (France)

Thymine dimer formed by irradiation of the monomer forms complexes with several metallic cations (such as Hg^{2+}). These complexes absorb at longer wavelengths than thymine dimer does. Irradiation in the absorption band of the complexes gives the thymine monomer and its metallic complexes. This reaction is analogous to the DNA photoreactivation for enzymes.

Studies on UV-induced skin reactions leading to skin tumours in experimental animals

SUNANDA D. JOSHI and S.S. RANADE

Cancer Research Institute, Parel, Bombay 400012 (India)

Experiments were performed to obtain UV-induced tumours in experimental animals. The dorsal skin of hairless Swiss mice was exposed to UV irradiation with a Philips UV tube (2537 Å) at dose levels of 10^8 - 10^9 erg mm^{-2} .

After the exposure, histological pictures, bone marrow and blood pictures were studied to correlate the events leading from normal skin reactions to the onset of malignant tumours. Data were collected on animals sacrificed 4, 6, 8, 12, 16 and 18 months after UV exposure. Estimations of zinc levels in the skin were also made during these studies. The results show that squamous cell carcinoma develops 18 months after the UV exposure in this schedule. The details of these studies are presented.

Photosynthetic carbon metabolism in *Portulaca oleracea* and *Arachis hypogaea* exposed to salt and water stress

B. A. KARADGE

Department of Botany, Shivaji University, Kolhapur (India)

C₄ acids (malate and aspartate) are immediate products of ¹⁴CO₂ fixation in *Portulaca oleracea*, a common succulent weed which can be classified as a C₄-facultative weak CAM succulent. When exposed to salt stress and the stress of deficiencies of K⁺ and Ca²⁺, the synthesis of C₄ acids is significantly greater. In K⁺-deficient leaves the accumulation of the label in 3-PGA is significant in initial and steady state photosynthesis. The C₄ trend reverts to the C₃ cycle in aging leaves. The results indicate that under environmental stresses the path of the carbon is altered significantly, affecting the synthesis of sugars. *Arachis hypogaea*, a C₃ plant, also shows an altered pattern of carbon metabolism under salt stress. This plant shows a C₄-like tendency when grown in the presence of NaCl and Na₂SO₄. The adaptive features of these plants under environmental stresses are discussed in view of these findings.