

12. SYMMETRY OPERATIONS ON OCTAGONAL BIOPOLYMER STRUCTURE OF PARTIALLY DEGRADED ECTEXINE OF GINKGO BILOBA L.

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Short communication

During our TEM investigations on partially degraded ectexine of *Ginkgo biloba* L. different kinds of biopolymer structures were observed. For the first time a probably octagonal unit was also observed. By the eightfold rotation we verified the symmetry of this unit. Moreover, in highly magnified pictures the molecular system of the globular units were also observed. This organization is new and we hope for interesting results.

Now we have summarized a very short review selected from the previous publications of our Laboratory concerning the biopolymer structures. The first globular biopolymer structures in fossil angiosperm ectexines revealed during the sedimentation processes (KEDVES, STANLEY and ROJIK, 1974). Further first application on the protoplast method (*Helix* enzyme) to the pollen grains of *Corylus avellana* (KEDVES, 1976) was used. Then after the first five-fold rotation of a regular pentagon biopolymer was observed (KEDVES, 1988). Basic for the methods for two dimensional symmetry operations was explained by KEDVES (1989a). Thereafter, first synthesis of the quasi-crystalloid biopolymer structures and its highly organized degrees by KEDVES (1989b). The three dimensional modelling of the quasi-crystalloid biopolymer system was also illustrated for the first time by KEDVES (1991). The first computer modelling for the quasi-crystalloid biopolymer structure (KEDVES and KEDVES, 1995) and biopolymer structures revealed with C60 fullerene/benzol solution (KEDVES and FREY, 2002).

Finally, we need to emphasize here that, the biopolymer system of the sporoderm seems to be more complicated as we believed earlier. The composition and the molecular organization depends on several factors and it is difficult to solve its organization with an unique model.

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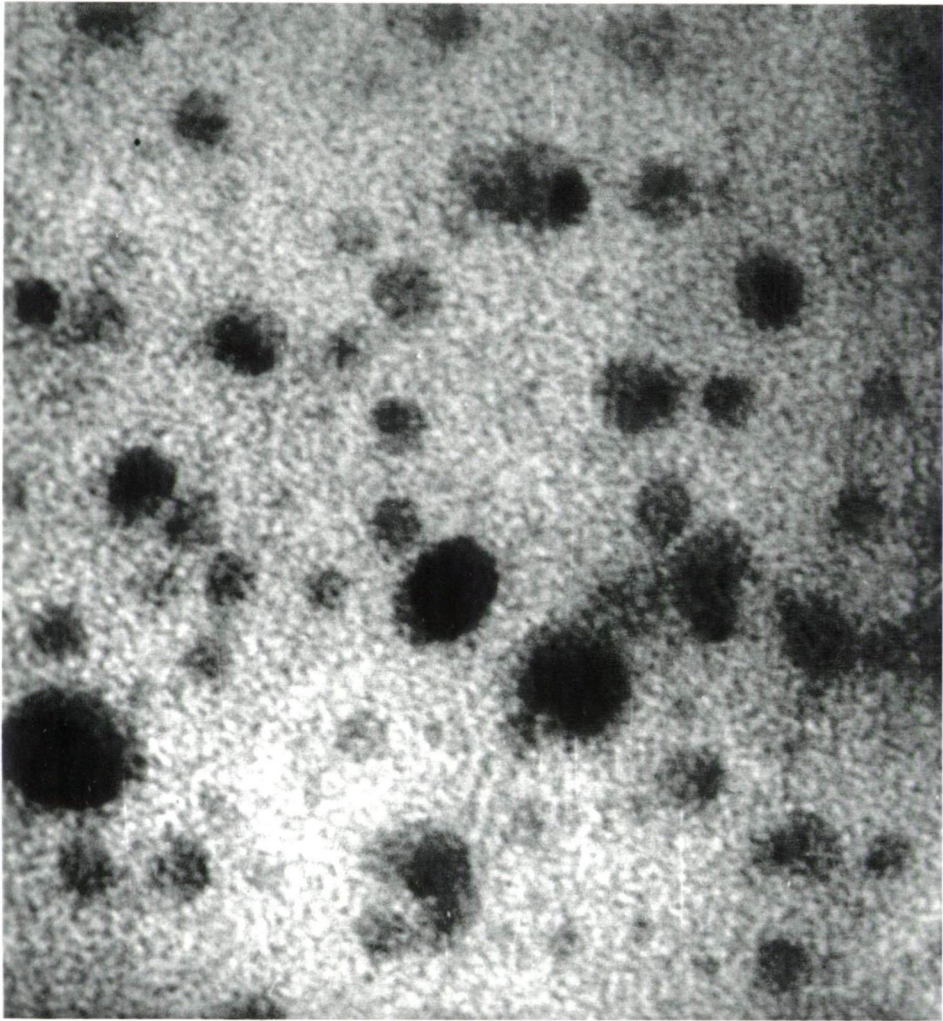


Plate 12.1.

Ginkgo biloba L. Biopolymer structure of the partially degraded ectexine with 2-aminoethanol for 24 hours and with KMnO_4 aq. dil. 1% for 24 hours. Experiment No.: T-12-220. Negative No.: 11730, 1,000,000x.

Plate 12.2.

Ginkgo biloba L. C.P.8.A.8.8. rotation picture of the octogonal biopolymer unit. C.P.8.A.8.8. The cyclic molecular structure of the electron dense biopolymer units are also well shown 1,600,000x.

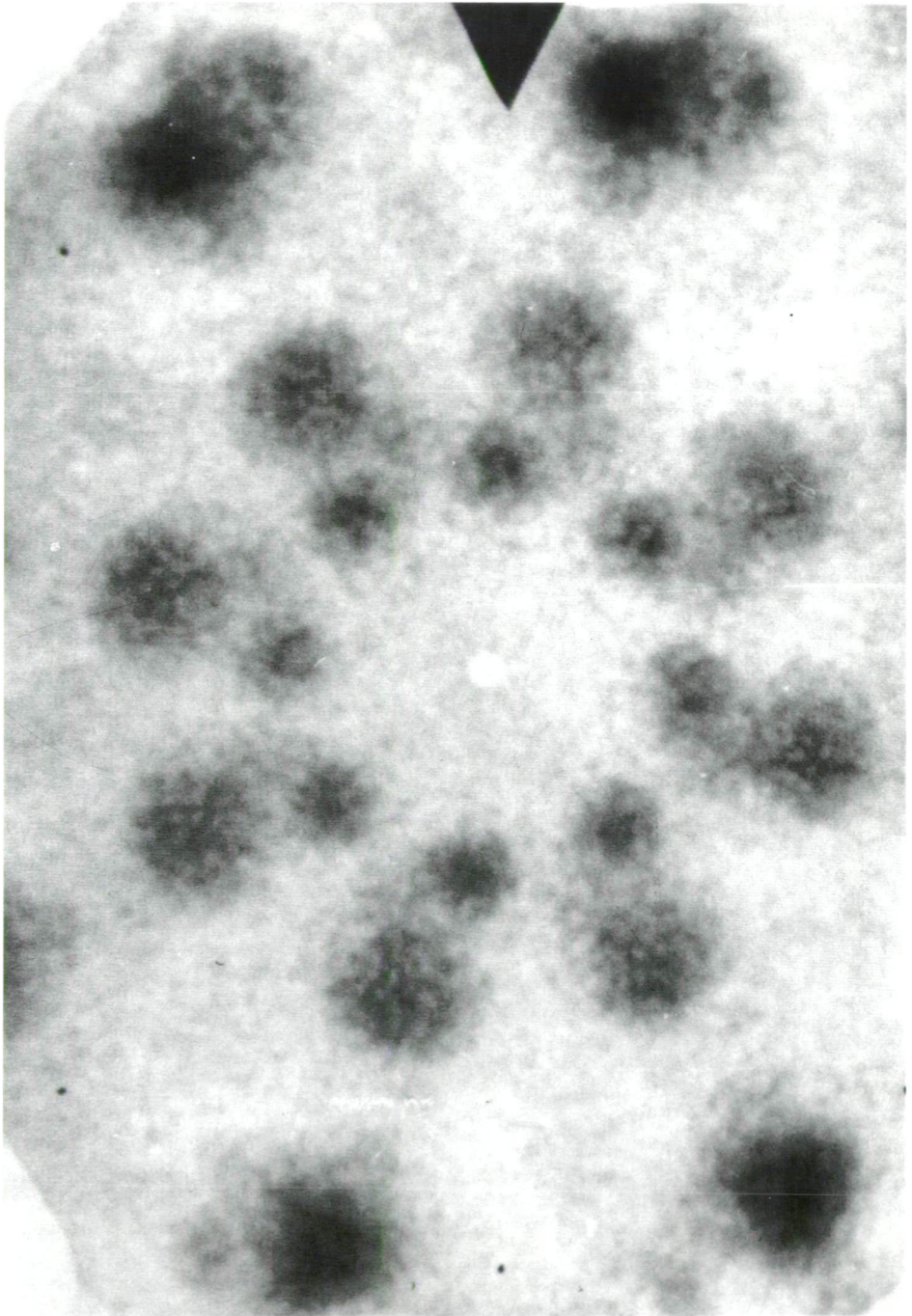


Plate 12.2.