8. NEGATIVE QUASI-CRYSTALLOID BIOPOLYMER NETWORK FROM THE EXOSPORE OF EQUISETUM ARVENSE L.

Short communication

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The presence of the quasi-crystalloid biopolymer structure in living organism was discovered in 1988 (KEDVES) on partially degraded ectexine of *Pinus griffithii* MCCLELL. The method of investigation of this PENROSE-like biopolymer system was elaborated in further papers (e. g.: KEDVES 1989, 1990, KEDVES and FARKAS, 1991, etc.) and several problems are now being investigated. During this kind of research as the first, and fundamental process, the stabilizing biopolymer system of the metastable quasi-crystalloid skeleton was dissolved and/or oxidized. After this step of experiment, different kinds of methods were used.

Among the study of the quasi-crystalloid skeleton as an important necessary part of this program the investigation of the stabilizing biopolymer system of the quasi-crystalloid skeleton was projected. To dissolve the quasi-crystalloid biopolymer system organic solvents of pentagonal molecular symmetry were believed to be the best (GÉVAY and KEDVES, 1989). Using different kinds of solvents, for the first attempt this basic research concept was not justified in

Plate 8.1. ▶

1–4. *Equisetum arvense* L.
TEM pictures of the exospore after partial degradation with diethyl-ether. Experiment No: 678. TEM pictures were taken by Dr. Á. PÁRDUTZ on a Zeiss EM 10 C instrument in the Max-Planck-Institut für biophysikalische Chemie, Karl-Friedrich-Bonhoeffer-Institut, D–3400 Göttingen-Nikolausberg, German Federal Republic.

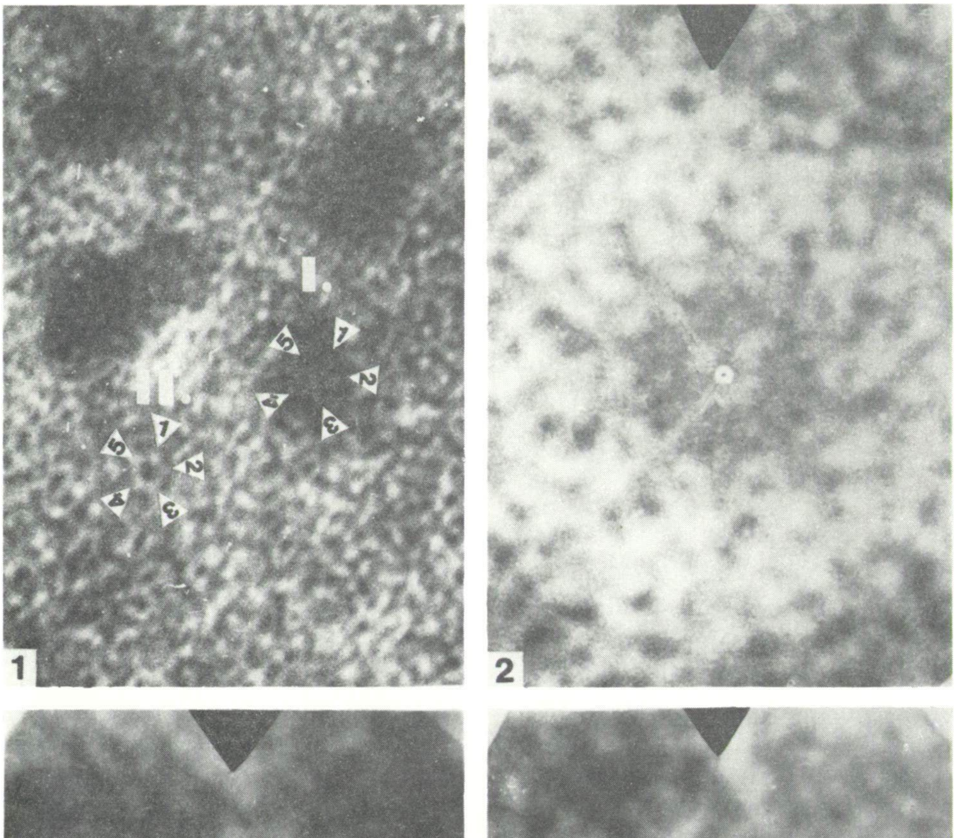
1. TEM picture of the partially degraded exospore. The negative quasi-crystalloid network system, and the different kinds of stabilizing biopolymer units are illustrated. Two "negative regular pentagonal polygons" were chosen for symmetry operations. Negative no: 431, 500 000x.

2–4. Rotation pictures of the biopolymer hole No II. The magnification of all pictures is 1 Million.

2. C.P.5.A.5.10.

3. C.S.$Y_{-1/1}$.5.5.

4. C.S.$Y_{+2/3}$.5.5.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every respect. But using the solvent of diethyl-ether to the spores of *Equisetum arvense* L., the dissolution of the quasi-crystalloid skeleton was successful. In Plate 8.1. a part of the results of this program is presented, with the remark, that the detailed results will be the subject of further papers. Fig. 1 (Plate 8.1.) represents the "negative quasi-crystalloid network biopolymer system" with dark stabilizing molecular structures. Two regular pentagonal polygons were chosen for investigation with the modified MARKHAM rotation method (Plate 8.1., figs. 2—4). The first methodological concepts will also be published later. But in this preliminary report it is also necessary to emphasize that during the different kinds of rotations we are "working" at the same time with the "negative" and "positive" points of symmetries. These points are the holes of the dissolved quasi-crystalloid skeleton ("negative units"), or the biopolymer units of the stabilizing system. As most important first result the negative PENROSE-like structure can be emphasized (Plate 8.1., fig. 4).

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