

Short communication

INVESTIGATIONS ON RECENT MONOSULCATE GYMNOSPERMATOPHYTA
POLLEN GRAINS

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The first data about the high temperature effect on the recent Angiospermatophyta pollen grains were published previously (KEDVES and KINCSEK, 1989). A large research program was started with different basic concepts of investigations including all spore and pollen types (iso-, homo-, heterospore, different kinds of gymnosperm and angiosperm pollen grains). Several papers are under publication or elaboration. Within this program, the recent Cycadales are very important. Dr. P. VORSTER (Dept. of Botany, The University of Stellenbosch, Rep. of South Africa) was kind to send pollen material from several species of the genus *Encephalartos* for our investigations. We express our sincerest thanks. The pollen samples were frozen at -20 °C. The aim of our first investigations was as follows.

1. Study of the pollen grains without staining or other kind of preparation.
2. Investigation of the morphological changes of the pollen grains after staining, acetolysis, and high temperature effect.
3. The qualitative and quantitative data were evaluated statistically.

Regarding the basic morphological concept of the recent monosulcate pollen grains, especially Cycadales, see the papers of AUDRAN (1970), AUDRAN and MASURE (1978), CRANWELL (1952), ERDTMAN (1965) and XI and WANG (1989). Our first previous and basic establishments are as follows:

1. The pollen grains of the genus *Encephalartos* LEHM. without stain or other kind of preparation are nearly isodiametric, and heteropolar. On the proximal pole (PP) a more or less isodiametric field is surrounded with a light line of the thinning of the tectum. On the distal pole, a characteristic colpus (or sulcus) occurs. (Plate I, fig. 1-5).
2. Occasionally, we have observed trichotomosulcate forms (Plate I, fig. 6-9) which in general are not characteristic for the monosulcate gymnosperm pollen grains. These pollen forms have also evolutionary significance, see for example the paper of KHAN (1976). Generally on the basis of our recent knowledge this

morphological characteristic feature occurs at the monosulcate angiosperm pollen grains, e.g.: *Palmae*.

3. As an example for the high temperature effect on these pollen grains see figs. 10-13 on the plate I; *Encephalartos transvenosus* STAPF et BURTT DAVY. Well shown are the early morphological characteristic features of the fossil mostly mesozoic "monosulcate" pollen types, cf. POTONIÉ (1962).

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Plate I

- 1,2. *Encephalartos caffer* MIQ. x3000.
3. *Encephalartos transvenosus* STAPF et BURTT DAVY x1000.
- 4,5. *Encephalartos lehmannii* ECKLON x1000.
- 6-9. *Encephalartos humilis* VERDOORN x1000.
- 10-13. *Encephalartos transvenosus* STAPF et BURTT DAVY, experiment No 722, x1000.

