



Calcareous dinoflagellate cyst assemblages from the Aptian/Albian boundary interval of the Vöhrum clay pit (Hannover area, Germany)

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Lower Cretaceous deposits of the Hannover region, northern Germany, mainly consist of dark to medium grey claystones, which originate from marine sedimentation in the central area of the so-called Lower Saxony Basin. The investigation of calcareous dinoflagellate cyst assemblages from 14 claystone samples of the Vöhrum clay pit, east of Hannover, yielded a diverse Latest Aptian-Earliest Albian flora (*H. jacobi*/L. *schrammeni* ammonite zones). A total number of 24 different morphotypes with radial and oblique wall structures were observed. Among these, eight taxonomically undescribed species have been identified. The associations of all samples are dominated by two common, typical boreal Early- to Mid-Cretaceous morphotypes with radial wall structures: *Praecalcionellum polymorphum* and *Echinodinella erinacea*, which together constitute 75 % of all determined calcispheres. All other morphotypes are scarce, except those of the phylogenetically closely related cysts of the cosmopolitan *Pirumella multistrata* group (including *Pirumella multistrata* forma *multistrata*, *Pirumella multistrata* forma *patriciagreelaye* Typ A and B, *Pirumella multistrata* forma *carteri*). These cysts with oblique wall structures together constitute another 16 % of all determined dinocysts. Our results are in accordance with the assumption, that cysts with radially structured calcareous walls (particularly those with thin, single-layered walls) tend to dominate the more distal assemblages of the boreal realm.

Praecalcionellum polymorphum and *Echinodinella erinacea* are alternately abundant within the succession; each of the species dominates intervals with a total thickness of 1-1.5 m. This rhythm fits well with pale-dark facies rhythms from time-equivalent outcrops of the Hannover region. A relationship is further supported by variations in CaCO₃ and TOC contents across the Vöhrum section, insinuating a rhythmic bedding. Pale-dark facies rhythms of Lower to Mid-Cretaceous deposits from the Lower Saxony Basin coupled with floral and faunal changes have often been related to Milankovitch-type climatic cycles. We suggest that *Praecalcionellum polymorphum* and *Echinodinella erinacea* were adapted to specific environmental conditions resulting from such climatic changes. However, further investigations are needed to obtain more information on the palaeoecology of these species, which might have the potential to become useful tools for palaeoenvironmental reconstructions.