

Palynofacies and dinoflagellate cysts across Jurassic/Cretaceous boundary

Petr SKUPIEN

*VŠB-Technical University, Institute of Geological Engineering;
17. listopadu, Ostrava-Poruba, Czech Republic;
e-mail: petr.skupien@vsb.cz*

Biostratigraphy of the sedimentary formations at the geological stage/substage boundary interval strata is characterized by significant decrease in both marine and terrestrial biodiversity indicating a global climatic change.

Jurassic/Cretaceous boundary sediments were studied in two totally different regions Tethyan and Boreal. Tethyan studies are situated to the Outer Western Carpathians (Brodno section – Slovakia, Skalice section – Czech Republic) and Northern Calcareous Alps (Leube quarry – Austria). Jurassic/Cretaceous boundary beds (Upper Volgian and Ryazanian) in the Nordvik Peninsula (North Siberia) were studied from Boreal region.

As for the Western Carpathians samples of the Late Tithonian containing very poorly preserved dinoflagellates prevail. Together with them, the inner linings of foraminifers and bisaccate pollen grains are present. This composition shows the conditions of open sea with the limited supply of terrestrial material. The remaining materials are black and brown phytoclasts. Black phytoclasts (from 70 to 90%) and amorphous organic material (from 10 to 20%) predominated in the samples of the Early Berriasian. Dinoflagellates indicate the conditions of open sea. In the composition of assemblage of dinocysts, representatives of the genus *Muderongia* (varying salinity group) prevail together with representatives of littoral group represented mainly by the genus *Systematophora*. Besides the above mentioned paleoecological groups of dinocysts, the species *Cometodinium habibii* is abundant in the assemblage.

Dinocysts *Amphorula metaelliptica*, *Systematophora penicillata* and *S. scoriacea* occurs in the Late Tithonian. The base of the Berriasian was defined on the occurrence of *Endoscrinium campanula*, *Circulodinium distinctum*, *Ctenidodinium elegantulum* and *Prolixosphaeridium* sp. A occur for the first time in the Early Berriasian in the calpionellid Calpionella biozone, Alpina subzone. In the uppermost part of Early Berriasian non-calcareous dinoflagellates were successfully correlated with the calpionellid Elliptica subzone.

The palynological assemblages of the studied part of the Northern Calcareous Alps are mainly composed of dinocysts, only in few samples were found few representatives of sporo-

morphs and foraminifera linings. In addition, dark amorphous particles, plant debris (light and dark brown in colour) occur in the samples. Samples of the Tithonian contain dinocysts, such as *Ctenidodinium ornatum*, *Occisucysta balois*, *Prolixosphaeridium mixtispinosum*, *Senoniasphaera jurassica*, *Systematophora areolata*, *Tehamadinium evittii* etc. Stratigraphically the most important species *Muderongia tabulata* and *Achomosphaera neptunii* occurs firstly in the Early Berriasian. Simultaneously this interval includes *Amphorula delicata*, *Circulodinium distinctum*, *Ctenidodinium elegantulum*, *Endoscrinium campanula*, *Systematophora areolata*, *S. complicata*, *S. scoriacea*, etc., so species well known from the Berriasian.

The palynomorph associations from the Nordvik Peninsula comprising abundant spores and pollens of terrestrial plants as well as diverse microphytoplankton (dinocysts, green algae, acritarch, foraminifera linings). The characteristic feature of dinoflagellate cyst assemblages is low abundance and diversity of chorate and proximochorate type. The microplankton associations strongly dominated by dinocysts with numerous gonyaulacaceans give evidence rather to deepwater and well aerated palaeoenvironments. Dysaerobic and poorly aerated conditions are characterized by the assemblages almost composed of prasinophytes.

Samples were dominated by dinocysts, such as *Cassiculosphaeridia magna*, *Endoscrinium campanula*, *Paragonyaulacysta borealis*, *Pareodinia asperata*, *P. ceratophora*, *Senoniasphaera jurassica*, *Sirmiodinium grossii*, *S. orbis*, *Trichodinium*, *Tubotuberella apatela*, *T. rhombiformis*. The presence of *Bourkidinium*, *Endoscrinium campanula* and *Spiniferites* in the Upper Volgian are interesting. They are known from the Early Berriasian of the Tethyan region.

This work was supported by the Grant Agency of the Czech Republic (GAČR No. 205/07/1365).