Early Devonian organic-walled microfossils from outcrop samples of the Cordobés Formation, Durazno Group, Norte Basin, Uruguay

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Abstract

The Durazno Group documented an Early Devonian transgressive-regressive cycle of sedimentation in the southernmost portion of the intracratonic Paraná Basin, in Uruguay known as the Norte Basin. The group comprises from base to top the Cerrezuelo, Cordobés and La Paloma Formations. The Cordobés Formation was deposited during the maximum flooding of the transgressive event, and contains Malvinokaffric marine invertebrates that inhabited Gondwanan cold marine waters, acanthodian fishes and trace fossils. The first palynological studies of the Cordobés Formation date from the 60's and 70's, from one outcrop, which reports the presence of phytoplankton and miospores but they only described a few acritarchs. In recent years, works referred to this unit have notably increased due to hydrocarbons exploration, but the results come from samples obtained mainly from boreholes. In order to expand the knowledge regarding Devonian palynofloras of Uruguay, in this contribution, we document the palynological assemblages collected from outcrop samples of the Cordobés Formation, near Blanquillo town in the Durazno Department. Some identified species allowed constraining the age of the unit and its correlation with other Early Devonian assemblages from South America. The studied samples contain acritarchs, prasinophytes, chlorophytes, chitinozoans, scolecodonts and miospores. The most representative phytoplankton species are *Cordobesia urguayensis, Dictyotidium dictyotum, Estiastra uruguaia, Exochoderma arca, E. triangularis, Palacanthus ledanoisii, Polyedrixium fragosulum, Triangulina alargada, Quadrisporites horridus, Veryhachium trispinosum* and *V. woodii*. The miospores include the following species: *Apiculiretusispora brandtii*, *Cymbohilates* sp., *Emphanisporites rotatus*, *Dibolisporites echinaceus*, *Dictyotriletes emsiensis* and *Knoxisporites riondae*. The presence of the acritarch *Veryachium woodii*, recently described from borehole samples of the Cordobés Formation, allows to constrain the age at the proximity of the Pragian-Emsian boundary, where also *Knoxisporites riondae* becomes a common taxa. *Cordobesia* species and *Dictyotriletes emsiensis* are forms restricted to Gondwana. Besides this, *Dictyotriletes emsiensis* allows the correlation with Furnas and Ponta Grossa Formations (Brazil) and Talacasto Formation (Argentina). The Early Devonian age is also supported by fossil invertebrates as well as U-Pb ages of detrital zircons obtained from the Duranzo Group.

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