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# Pinocchiodinium erbae (Acritarch, marine phytoplankton) – stratigraphic distribution and constrains of the Barremian-Aptian transition

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## Abstract

The acritarch species *Pinocchiodinium erbae* Torricelli 2000 was originally described from the Lower Cretaceous section cored in the Cismon Valley (Southern Alps, Italy). Due to its peculiar and easily identifiable morphology and its common occurrence within the Selli level (OAE1a) documented in the Cismon section, it was proposed as a potential marker species for the Aptian sediments of the Tethys (e.g., Torricelli, 2001). The aim of this study is to update the stratigraphic distribution of *P. erbae* based on new evidences from other Tethyan localities and to characterize the Barremian–Aptian transition. The study of the Miravete section, cropping out in the Galve sub-basin (Eastern Spain), showed rich and diversified palynological assemblages. The interval sampled included the Artoles to the Forcall Formation (Barremian to lower Aptian). The age of the Forcall Formation (lower part) was formerly considered as Aptian, based on ammonite data (*Deshayesites oglanlensis* Zone, Moreno-Bedmar and Garcia, 2011). However, a recent re-examination of the ammonite material suggested an attribution to the uppermost Barremian (*Martelites sarasini* Zone, Frau *et al.*, 2020). The first occurrence (FO) of *P. erbae* was recorded within the lower part of the Forcall Formation, suggesting a late Barremian-early Aptian age for this event. This first result was challenged via a recent palynological investigation carried out in the Gorgo a Cerbara section (Northern Apennines, Central Italy) proposed as GSSP candidate for the base of the Aptian Stage (Erba, 1996; Unida and Patruno, 2015). The study focused on a 5.5 m thick interval spanning the Barremian-Aptian transition (from the uppermost Maiolica Formation to the lower part of Marne a Fucoidi Formation, including the Selli level). In this section, *P. erbae* was recorded a few centimeters below the base of CM0r. Its FO, within the Maiolica Formation (*Globigerinelloides aptiensis* Zone), is located 2.5 m below the proposed Barremian-Aptian boundary, as recently reviewed by Coccioni (2020). This is consistent with the ammonite data, assigning the upper part of CM0r in Gorgo a Cerbara to the uppermost Barremian (*M. sarasini* Zone, Frau *et al.*, 2018), and with the composition of the associated dinoflagellate cyst assemblages. These are characterized by common to

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abundant *Druggidium deflandrei* and *Pterodium* spp. and by other accessory species, showing a remarkable affinity with the palynological assemblages recorded within the Barremian historical stratotype in the Angles section (Southeast France; De Renéville and Raynaud, 1981). These results seem to point to an earlier appearance of *P. erbae*, likely dateable to the latest Barremian.

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