

New materials of multicellular algae from the earliest Cambrian Kuanchuanpu biota in South China

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The Kuanchuanpu biota (ca. 535 Ma) from the basal Cambrian in South China yields various phosphatized, three-dimensionally preserved microscopic fossils, such as animal embryos, cyanobacteria, and algae. This provides an exceptional window for investigating the rapid divergent evolution of animal phyla in the early Cambrian ocean. However, the fossil eukaryotic algae are poorly documented and are not properly incorporated into the conceptual food web of the Cambrian ocean ecosystem. In this study, we report a new taxon of calathiform alga, *Calathophycus irregularatus* Tang gen. et sp. nov., and an indeterminate alga, from the Kuanchuanpu biota. *Calathophycus irregularatus* can be distinguished from other reported phosphatized multicellular algal fossils from the Kuanchuanpu biota and the Ediacaran Weng'an biota (Guizhou Province, China), based on the external morphology and features of cell clump aggregation. The observation of *C. irregularatus* and the indeterminate alga indicates a certain diversity of algae at the beginning of the Cambrian. Concerning the regularly or irregularly shaped multicellular algal fossils from the Kuanchuanpu Formation, co-occurring spherical fossils, previously interpreted as “cleavage stage” of animal embryos, should be reconsidered in affinity.

Key words: Algal fossils, bowl-shaped fossils, early Cambrian, Kuanchuanpu biota.

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