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Biostratigraphic succession of acanthomorphic acritarchs of the Ediacaran Doushantuo Formation at the Yangtze Gorges area and its implication for the global correlation

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Ediacaran large acanthomorphic acritarchs have been found from several basins in the world. Some globally distributed taxa with short and well-documented stratigraphic ranges provide potential tool for biostratigraphic subdivision and global correlation of Ediacaran strata despite limitations caused by facies control, taphonomic bias and taxonomic problems.

The Yangtze Gorges area of South China is one of the most important locations for studying Ediacaran successions. Abundant acanthomorphic acritarchs, which first appeared shortly after the ~635 Ma Nantuo glaciation and disappeared before ~551 Ma, are found in the Ediacaran Doushantuo Formation. Based on their stratigraphic distribution, two assemblages of acanthomorphic acritarchs (lower *Tianzhushania spinosa* assemblage and upper *Hocosphaeridium anozos* - *Hocosphaeridium scaberfacium* assemblage) had been established. These two assemblages, which are found in the lower (Member II) and the upper (Member III) Doushantuo Formation, respectively, are constrained stratigraphically to the intervals of the first and the second positive $\delta^{13}\text{C}$ excursions (EP1 and EP2), respectively, and are separated by an interval of second negative $\delta^{13}\text{C}$ excursion (EN2).

The lower assemblage is dominated by the taxon *Tianzhushania spinosa*. Apart from South China, the taxon *Tianzhushania spinosa* has been found from northern India (personal communication between Dr. Chongyu Yin and Dr. Harshita Joshi), which suggest that the lower *Tianzhushania spinosa* assemblage should be equal to the acanthomorphic assemblage in northern India.

By comparison with the lower *Tianzhushania spinosa* assemblage, the upper *Hocosphaeridium anozos* - *Hocosphaeridium scaberfacium* assemblage comprises more acanthomorphic acritarchs both in terms of the number of specimens and in the diversity of the species. Fifteen species, *Appendisphaera clava*, *A. crebra*, *A.?* *hemisphaerica*, *A. longispina*, *A. magnificum*, *A. setosa*, *Eotylotopalla delicata*, *Hocosphaeridium anozos*, *H. scaberfacium*, *Knollisphaeridium maximum*, *Mengeosphaera constricta*, *Schizofusa zangwenlongii*, *Sinosphaera rupina*, *Xenosphaera liantuensis*, *Variomargosphaeridium floridum*, are the predominant species in upper assemblage, among them, the nominal taxa *Hocosphaeridium anozos*, and *H. scaberfacium* occur in greatest numbers and throughout the assemblage, whereas the species *Tianzhushania spinosa* have gone extinct.

Previous biostratigraphic studies indicated that many taxa from the upper acanthomorphic assemblage in the Yangtze Gorges area have been reported from Australia, Siberia and the East European Platform. These show that the upper acanthomorphic assemblage can be correlated with the Ediacaran Complex Acanthomorphic Palynoflora (ECAP) of Australia, and acanthomorphic assemblage reported from Siberia

and the East European Platform. However, this is just an initial correlated scheme which requires more improvements.

