

Silicified and phosphatized Tianzhushania, spheroidal microfossils of possible animal origin from the Neoproterozoic of South China

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Comparative study of microfossils from two kinds of sediments: chert intercalations (studied in thin section) and phosphorite/phosphatic carbonate (in thin section and maceration), from the upper Neoproterozoic Doushantuo phosphorites in the Wengan area, Guizhou Province, South China, shows that the phosphatized *Megasphaera ornata* and the chert-preserved *Tianzhushania tuberifera* should be regarded as representing the same taxon preserved by different mineralization processes. In phosphatized specimens the outer wall is often peeled off, exposing the ornamented middle wall. Some phosphatized specimens isolated from the rock matrix and specimens seen in thin sections of phosphorites show a partly preserved outer wall with spines, which can be compared to the thin-sectioned specimens from the chert beds. The small pits usually seen on the surface of the ornamented middle wall of phosphatized specimens correspond to the attachment spots of the spines in the outer wall. The presence of a spiny outer wall is a characteristic of *Tianzhushania* Yin and Li, 1978. *Tianzhushania ornata* (Xiao and Knoll, 2000) comb. nov. is here proposed as the valid name for the species. The proposed resting-egg nature of *T. ornata*, mainly based on the ornament type of the middle wall, cannot be excluded. The presence of a spiny outer wall, however, suggests that it is a pelagic rather than a benthic form.

Key words: Metazoa, Tianzhushania, Megasphaera, microfossils, phosphorites, cherts, Doushantuo Formation, Neo– proterozoic, China.

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