

Microfossil assemblages from the Paleoproterozoic (Changcheng Group) and Mesoproterozoic (Huailai Group) of North China

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ABSTRACT

Microfossils providing the earliest evidence for eukaryotes are organic-walled vesicles ornamented with processes (*Tappania*, *Shuiyoushaeridium*), polygonal patterns (*Dictyosphaera*, *Shuiyoushaeridium*) and concentric striations (*Valeria*). They form an assemblage with worldwide distribution, and range from late Paleoproterozoic to early Mesoproterozoic [1-5], or younger Proterozoic strata for some taxa. In this study, we investigate a large succession of unmetamorphosed Proterozoic shales and siltstones from the 1.65 Ga Chuanlinggou Formation (Changcheng Group) and the 1.35 Ga Xiamaling Formation (Huailai Group) of the Yanshan basin, Northern China. Previous paleontological investigations of these strata reported intriguing macroscopic carbonaceous compressions, including forms interpreted as macroscopic eukaryotes [6-7], but not the distinctive microscopic eukaryotes, except for *Valeria lophostriata*^[8] and possible new silicified forms^[9]. Preliminary results reveal well-preserved assemblages dominated by unornamented sphaeromorphs of unknown biological affinities, filamentous forms that are probably prokaryotic, but also the presence of convincing eukaryotes unreported so far for the area. Combined with high-precision chronological frameworks in the Proterozoic Yanshan Basin, and microanalyses of specific taxa, our study of these assemblages will permit to decipher the very early record of fossil eukaryotes, and underline the importance of the late Paleoproterozoic-early Mesoproterozoic period for early eukaryote evolution.

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