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The Cambrian explosion in Iran: new insights from small shelly fossils of the Ediacaran-Cambrian transition in the Soltanieh and Alborz Mountains

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Little has been documented about the palaeontological record of the Ediacaran-Cambrian boundary in Iran. However, fossils from this time interval are of major interest to improve our understanding of the Cambrian Explosion of animal life. Microfossils from the earliest Cambrian sedimentary successions are of particular interest, as they belong to the oldest records of skeletal bilaterians. Exposures in Iran are critical for this purpose, promising diverse and well-preserved small shelly fossils (SSFs) from the Ediacaran-Cambrian Soltanieh Formation of the Alborz Mountains have been mentioned in brief reports. In this study, the diversity of the SSFs from the Soltanieh Formation in the Alborz Mountains is revised, and novel SSFs data from the Soltanieh and overlying Barut formations in the Soltanieh Mountains are presented. The Soltanieh Formation yielded species of the genera *Protohertzina*, *Anabarites*, *Siphogonuchites*, *Lopochites*, *Lomasulcachites*, *Maikhanella*, *Purella*, *Aetholicopalla* and other problematic microfossils. Species of *Siphogonuchites*, *Pseudorthotheca*, *Oelandiella* and other molluscs are reported for the first time from the Barut Formation. The data provide new knowledge to assess the palaeobiodiversity of the first skeletal metazoan benthic communities. Informative specimens are considered for the appraisal of the still-unresolved biological affinities of problematic SSFs. The comprehensive data on the stratigraphic range of the SSFs provide the opportunity to discuss the early Cambrian biostratigraphy of Iran and its global correlations. Faunal affinities with the Yangtze platform and the western Gondwana margin are debated.

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