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# Lower Cretaceous Orbitolinids of Zagros Mountains in Iran and their evolutionary studies

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Orbitolinids are among the most important group of foraminifera which are of high importance in sediment biostratigraphy of the Early-Mid Cretaceous sequences.
Dariyan Formation contains a rich and diversified orbitolinid assemblage. The Dariyan Formation can be divided into three parts in the area investigated. The upper and lower parts of the formation consist of medium to thick bedded limestones, being separated by thin bedded limestones and marine marls of the middle part. Only limestones of upper part of the Dariyan Formation in study area contain the orbitolinid foraminifera which are studied here in this paper.
Through studying the Lower Cretaceous shallow water limestones of the upper Dariyan Formation, Based on the size, shape and complexity of embryonic apparatus 6 species of orbitolinid belonging to subgenus Mesorbitolina Schroeder and genuse Praeorbitolina Schroeder are recognized as below:
Orbitolina (M.) lotzei. Orbitolina (M.) parva. Orbitolina (M.) texana, Orbitolina (M.) subconcava. Orbitolina (M.) cf. pervia and Praeorbitolina wienandsi.
Concerning the origin of orbitolinids, there are different ideas, the most important and newest one which has been introduced by Cherchi and Schroeder shows 4 different phylogenetic lineages in this group.
1. Eopalorbitolina pertenuis – palorbitolina lenticulari (Early Barremian-basal Late Aptian)
2 .Praeorbitolina cormyi – Mesorbitolina aperta (Early Aptian –Early Cenomanian)
3 .Orbitolina sefini – Orbitolina concava (Late Albian – Early Cenomanian)
4. Conicorbitolina moulladei– Conicorbitolina conica (Late Albian – Middle Cenomanian)
Based on appearance and stratigraphic distribiutions of orbitolinids in the Dashtak stratigraphic section and comparison with Cherchi and Schroeder's evolutionary model, Praeorbitolina wienandsi – Mesorbitolina cf. pervia phylogenetic lineage is herein suggested for the upper part of the Dariyan orbitolinids in the studied area comprising part of the Praeorbitolina cormyi – Mesorbitolina aperta Cherchi and Schroeder phylogenetic lineage.
The most important changes in the phylogenetic lineage, reperesented hereing are as following:
Change in the position of embryonic apparatus, shape of protoconch and subembryonic zone, size increase in embryonic apparatus and protoconch, increase in number of subembryonic and deuteroconch partitions.