Microbiostratigraphy of Cretaceous deposits in Northern Iran, Alborz Mountains

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ABSTRACT:
The Cretaceous deposits in northern Iran, Alborz mountains is well exposed, and it consisted of mixed layers volcanic as well as sedimentary rocks. In this study, the micropaleontology of the Cretaceous deposits in northern Alborz in one measured stratigraphic sections is discussed. The Study of foraminifera of these deposits enables to find the most standard biozones defined in Tethyan domain. 10 biozones were recognised: Pseudocyclammina lituus-Trocholina alpina Assemblage zone (Neocomian); Dictyococcus arabicus Total Range Zone (Barremian); Choffotella decipiens Range Zone (Aptian); Iraqia simplex-Nezzazatinella picardi Assemblage Zone (Albian); Dicarinella concavata Interval Zone (Coniacian); Dicarinella asymetrica Taxon Range Zone (Santonian); Globotruncanita elevata Partial Range Zone (Early Campanian); Radotruncana calcarata Total Range Zone ( Late Campanian); Gansserina gansseri Interval Zone (Early Maastrichtian); Abathomphalus mayaroensis Total Range Zone (Late Maastrichtian), respectively.

Keywords: Biostratigraphy, Foraminifera, Chalus Formation, Alborz, Cretaceous

1. INTRODUCTION
The Cretaceous sedimentary successions have a wide distribution in northern Iran and show great numerous local variations in facies and thickness even in relativel in small area. In the Alborz Zone, due to orogenic and epirogenic movements, the Cretaceous stratigraphic successions are normally divided into three distinct large-scale parts. These major Cretaceous sedimentologic cycles including: 1) Neocomian to Middle-Late Aptian (118-105 Ma); 2) Middle-Late Aptian to Late Cenomanian (105-92 Ma); 3) Early Turonian to Late Maastrichtian (92-65 Ma). More studies of the Cretaceous deposits in Alborz Zone have been conducted on biostratigraphic criteria. Dellenbach (1964) described the geology and stratigraphy of the Tehran Area. Steiger (1966) described the geology of the West Firuzkuh Area with special reference to lithostratigraphic aspect of the Cretaceous sediments. Allenbach (1966) described the Cretaceous deposits in Damavand Area. Assereto (1966) descried the geology of the Upper Djadjerud and Lar Valleys with emphasis on the lithostratigraphy of the Cretaceous deposits. Cartier (1971)
described the lithostratigraphy and micropaleontology of the Cretaceous sediments in Lower Chalus Valley Area. Sussli (1976) has given details of the lithology and correlation of the lithostratigraphic units in Lower Haraz Valley Area (Central Alborz).

The present study focuses on microbiostratigraphy framework of the Cretaceous deposits in Southern Chalus outcrop (Northern Alborz) and could be a supported research for better understanding of these deposits in the adjacent sections.

2. Geological Setting

Based on the sedimentary sequence, magmatism, metamorphism, structural setting and intensity of deformation, the Iranian Plateau has been subdivided into several fragments, including Zagros, Sanandaj-Sirjan, Urumieh-Dokhtar, Central Iran, Alborz, Kopeh-Dagh, Lut, and Makran (Berberian and King, 1981. Fig. 1).

The Alborz Mountains system in northern Iran is southern part of an Alpine orogenic (Aghanabati, 2004). It extends in a sinuous manner for about 2000 km from lesser Caucasus of Armania and Azerbaijan Republic in the northwest to the Paropamisus Mountains of northern Afghanistan to the east, forms a composite polyorogenic belt (Alavi, 1996). Based on lithofacies analysis, Alavi (1996) distinguished seven major tectonostratigraphic units in Alborz system: 1) upper Precambrian to Lower Ordovician platform sequences; 2) Middle Ordovician to Devonian magmatic arc; 3) Devonian to Middle Triassic Continental shelf sequence; 4) Upper Triassic to Lower Jurassic foreland deposits; 5) Middle Jurassic to Cretaceous epicontinental shelf succession; 6) Cretaceous sequences; 7) Cenozoic synorogenic sediments.

Many authors studied the Cretaceous deposits in Alborz Zone and divided these sediments into different lithostratigraphy units. Despite the apparent complexity of the terminology and detailed correlation of Cretaceous sedimentary sequence, lithological changes are relatively minor. From the Barremian up until the end of Cenomanian the sea transgressed over the emergence area. The lower Cretaceous sequence is represented by the Tizkuh Formation, Chalus Formations and C1, C2, K1 and K2 lithostratigraphy Units. During Lower Cretaceous in Central Alborz, evaporitic basins and lakes occupied the Damavand-Firuzkuh area (Sussli, 1976). There were two periods of volcanic activity during the Lower Cretaceous.

A subsequent regional emergence, by local uplifts, accompanied at the end of Cenomanian. Further Transgression of the sea caused to sedimentation of thick basinal deposits in Northern Alborz.
Fig. 1. General map of Iran showing eight geologic provinces (adopted from Berberian and King, 1981).

The section studied is located about 12 km of south of Chalus city in Mazandaran province (Fig.2). The geographic coordinates of the section studied 51° 20’ 54” longitude and 36° 32’ 20” latitude (Fig.1).