Investigating the relationship between sedimentary facies and diagenetic processes in the development of karst formations of the Sarvak Formation (Middle Cretaceous), of the Rag- Henna Anticline (southern Isfahan)

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Abstract

In this study, in order to investigate the effect of the physical and chemical properties of carbonate rocks on the development of karst forms, carbonate rock units of the Sarvak Formation have been studied in the anticline of the Rag- Henna (south of Isfahan). This formation consists of a thick sequence of carbonate deposits, and karst geomorphological phenomena such as carneys, dissolution cavities, ponors and karst springs are well visible. The Sarvak Formation is composed of 8 sedimentary that are deposited in tidal, lagoon, barrier and open sea environments. According to the results of chemical analysis, the percentage of calcium oxide in the studied samples is more than 40% and monirim oxide is at most 1.27%. Also, by conducting geotechnical experiments, the porosity of carbonate samples was determined. Diagenic processes affecting the porosity of the Sarvak Formation in the region include compression, cementation, dissolution, fracture and dolomitization. The lacquer supporting luminosities of the lagoon division have better porosity due to the effect of their dissolution and fracture, and more variation in the karst forms of this microfacies is observed. Therefore, determination of porosity and the evaluation of diagenesis processes on carbonate rocks can be a useful tool for separating the zones from the point of view of their ability to develop.

Keywords: Sedimentary facies, diagenetic processes, karst, Rage-Hanna anticline