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Identification of Deposition Sequences of the Organic Content of Lower Albian-Cenomanian Age in Northern Tunisia: Correlation between Molecular and Stratigraphic Fossils

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Abstract : The present work is an organic geochemical study of the Fahdene Formation outcrops at the Mahjouba region belonging to the Eastern part of the Kalaat Senan structure in northwestern Tunisia (the Kef-Tedjerouine area). The analytical study of the organic content of the samples collected, allowed us to point out that the Formation in question is characterized by an average to good oil potential. This fossilized organic matter has a mixed origin (type II and III), as indicated by the relatively high values of hydrogen index. This origin is confirmed by the C29 Steranes abundance and also by tricyclic terpanes C19/(C19+C23) and tetracyclic terpanes C24/(C24+C23) ratios, that suggest a marine environment of deposit with high plants contribution. We have demonstrated that the heterogeneity of organic matter between the marine aspect, confirmed by the presence of foraminifera, and the continental contribution, is the result of an episodic anomaly in relation to the sequential stratigraphy. Given that the study area is defined as an outer platform forming a transition zone between a stable continental domain to the south and a deep basin to the north, we have explained the continental contribution by successive forced regressions, having blocked the albian transgression, allowing the installation of the lowstand system tracts. This aspect is represented by the incised valleys filling, in direct contact with the pelagic and deep sea facies. Consequently, the Fahdene Formation, in the Kef-Tedjerouine area, consists of transgressive system tracts (TST) brutally truncated by extras of continental progradation; resulting in a mixed influence deposition having retained a heterogeneous organic material.

Keywords : molecular geochemistry, biomarkers, forced regression, deposit environment, mixed origin, Northern Tunisia
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