

Molecular contents of the lower Eocene (Ypresian) source rock in Tunisia

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This organic geochemical study of the Ypresian BouDabbous source rock aims to assess the organic contents of five outcrop samples (Cap Zbib, Sidi Asker, Eddis, Sidi Abdallah, Jebal Oueslat) in northern and central Tunisia and a subsurface analogue from Sidi Litayem oilfield.

The molecular contents by GC-MS analysis (steranes and terpanes) suggests that these sediments have a marine origin, except at Jebal Oueslat characterized by the abundance of C₂₉ steranes explained by the reservoir character impact. The diahopanes and homohopanes arrangement indicates an oxygen minimum zone (OMZ) with normal conditions of salinity confirmed by gammaceranes low rates ($Gam/C_{30H} < 0.20$). The maturity is suggested by Ts/Tm ratio, and by S configuration of Carbon 20, with The C₂₉ isomers [$C_{29}\alpha S/C_{29}\alpha\alpha(R+S)$] and [$C_{29}\beta\beta/(\beta\beta+\alpha\alpha)$]. We can affirm the maturity of Cap Zbib and Jebal Oueslat samples, and that the rest of samples have been in the early oil window. About lithology, the abundance of steranes compared to the diasteranes indicates a carbonate lithology; that is confirmed by the greater or less concentration of tetracyclic terpane t₂₄. Moreover, the two isomers $\alpha\beta$ and $\beta\alpha$ of C₂₇-diasteranes have relatively low contents relative to carbonate facies.