

Evolution of lipid biomarkers as indicators of environmental changes in an anoxic lagoon : "Lac de Tunis"

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The "Lac sud de Tunis", is an anoxic confined environment that has gone through different stages of evolution during Holocene period.

The vertical distribution of molecular biomarker composition in samples from sediment cores suggests that there was been recent changes in deposited conditions (oxido-reduction) and in the source of lipid fraction deposited during Holocene.

The abundance of hopanoids (m/z 191) confirms a significant contribution of bacterial content in sediment organic matter. Thus, the detection of Methylhopane (2-methyl hopane nC31) in different levels of sediment in the lagoon proves the existence of cyanobacteria from the beginning of the Holocene. Examination of steranes analysis (m/z 217, 218) helped to clarify the origin of the organic matter which are derived from an autochthonous algal biomass (green algae) and phytoplankton (dinoflagellates).

The signature of these geochemical fossils participates in the reconstitution of the depositional environment and in the evaluation of the degree of anoxia during the different stages of lagoon evolution. The detection of unsaturated compounds (22,29,30 Trisnorhop17 (21)ene) allowed a better appreciation of the changes in oxido-reduction conditions in the lagoon. The presence of specific markers of anoxic hypersaline environment such as methylsteranes or D2-cholestene-2-ol, is a remarkable index attesting of the progressive installation of anoxic conditions.

The variation in the composition of lacustrine lipid biomarker can be used as a guide to reconstruct past environmental conditions and to evaluate paleoclimate change.