Title:	Identification of lanostanes, A-ring methylated steranes and secosteranes in late Neoproterozoic crude oils by GC×GC-TOFMS: New insights into molecular taphonomy of steroids
Authors:	Bhattacharya, Sharmila (/jspui/browse?type=author&value=Bhattacharya%2C+Sharmila) Dutta, Suryendu (/jspui/browse?type=author&value=Dutta%2C+Suryendu) Kumar, Sumit (/jspui/browse?type=author&value=Kumar%2C+Sumit)
Keywords:	lanostanes steranes secosteranes Neoproterozoic
Issue Date:	2021
Publisher:	Elsevier
Citation:	Geobios, 68, 47–59.
Abstract:	The late Neoproterozoic marine succession (Marwar Supergroup) deposited in the Bikaner-Nagaur Basin in western India is an excellent provenance to study steroid biomarkers. Traditional one-dimensional gas chromatography mass spectrometry (GC–MS) and metastable reaction monitoring (MRM) transitions have been previously employed for routine biomarker analyses of crude oils and sediments. The present study with GC×GC-TOFMS (time-of-flight mass spectrometer) demonstrates an improved distribution of the sterane compounds segregated from the co-eluting n-alkanes, cycloalkanes and triterpanes in terminal Proterozoic crude oils. The steranes identified here offer novel insights into the molecular taphonomic alteration of eukaryotic lipids during the late Neoproterozoic. The presence of lanostane and 3β alkyl steranes is probably indicative of a depositional environment stressed by high salinity. To the best of our knowledge, this is the oldest known record of lanostane steroids found in the geosphere. Secosteranes with an open C-ring form as a result of diagenetic cleaving of carbon–carbon bonds. The concomitant presence of 2α-, 3β - and 4α-methyl steranes (A-ring methylated steranes) reflects specific biological input and a distinct palaeo-depositonal environment. The 3β - and 2α-methyl steranes probably form by migration of methyl substituents within the steroid structure. The recognition of a diverse range of steroid compounds by GC×GC-TOFMS advocates its excellent analytical potential in the study of natural products in geological samples. Hence, this state-of-the-art technology will be worth using for re-evaluating and investigating hydrocarbon biomarkers in order to minimize the gaps that exist in the understanding of biotic evolution over geological time scales.
Description:	Only IISER Mohali authors are available in the record.
URI:	http://hdl.handle.net/123456789/4374 (http://hdl.handle.net/123456789/4374)
Appears in Collections:	Research Articles (/jspui/handle/123456789/9)

Files in This Item:

File	Description	Size	Format

Need To Add…Full Text_PDF..pdf (/jspui/bitstream/123456789/4374/1/Need%20To%20Add%e2%80%a6Full%20Text_PDF..pdf)	Only IISER Mohali authors are available in the record.	15.36 kB	Adobe PDF	View/Open (/jspu

Show full item record (/jspui/handle/123456789/4374?mode=full)

(/jspui/handle/123456789/4374/statistics)