Pergamon

PII: S0146-6380(97)00106-X

Org. Geochem. Vol. 28, No. 1/2, pp. 137, 1998

Printed in Great Britain
0146-6380/98 $19.00 + 0.00

Response to Comments of Grossi and de Leeuw

T. A. ABRAJANO[1], T. BIEGER[2] and J. HELLOU[2]

[1]Department of Earth Sciences, Memorial University of Newfoundland, St. John's, Newfoundland, Canada A1B 3X5, [2]Science Branch, Department of Fisheries and Oceans, P.O. Box 5667, St. John's, Newfoundland, Canada A1C 5X1

We would like to thank Grossi and de Leeuw (1997) for their comments on our paper (Bieger *et al.*, 1997). The work we described in that paper was completed in 1994, some two years before the publication of Grossi *et al.* (1996), hence we could not have benefitted from the results of the latter work. Bieger *et al.* (1997) employed conventional sampling, preparatory and analytical approaches in a study that was primarily designed to examine the origin of a suite of highly branched C25 isoprenoid alkenes, as well as the temporal changes in the carbon isotopic compositions of n-alkanes. Likewise, our paper was submitted a year prior to the publication of Grossi *et al.* (1996). We concur with Grossi and de Leeuw (1997) that the phytadienes we described could have been produced during the sample preparation.

As Grossi and de Leeuw (1997) pointed out, the specific derivation of the phytadienes was not central to our discussion of the temporal shifts in the carbon isotopic compositions of the biogenic hydrocarbons during the spring bloom. The diolefins questioned by Grossi and de Leeuw (1997) were only minor components of the plankton tow materials, and were at most present at trace concentrations in the sediment samples. The key message of Bieger *et al.* (1997) is that carbon isotopic shifts in individual hydrocarbons reflect fluctuation in diatom growth rates and aqueous CO_2 concentration (across the bloom period) superimposed on a multiplicity of sources and different timing of biosynthesis of individual hydrocarbons. Interestingly, one of the curious observations we made in our paper was the disparity between the carbon isotopic trends of pristane and the isomeric phytadienes. Grossi and de Leeuw (1977) may have offered a good explanation for this observation.

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