

ESCOLA UNIVERSITÀRIA POLITÈCNICA DE MANRESA

Departament d'Enginyeria Minera i Recursos Naturals

**ESTUDI DELS MARCADORS
BIOMARCADORS DE CONQUES
ALTAMENT REDUCTORES**

Autor: Miquel Cabrera Ortega
Director: F. Xavier de las Heras i Cisa

Juny, 1999

**9. REFERÈNCIES
BIBLIOGRÀFIQUES**

9. REFERÈNCIES BIBLIOGRÀFIQUES

- ABELLA, C., MOUTESINOS, E. i GUERRERO, R. (1980) Field studies on the competition between the purple and green sulphur bacteria for available light. *Dev. Hydrobiol.* **3**, 173-181.
- ADAM, P. (1991) Nouvelles structures organo-soufrées d'intérêt géochimique: Aspects moléculaires et macromoléculaires. Tesi Doctoral, Universitat Louis Pasteur, Strasbourg.
- ADAM, P., PHILIPPE, E. i ALBRECHT, P. (1998) Photochemical sulfurization of sedimentary organic matter: A widespread process occurring at early diagenesis in natural environment? *Geochim. Cosmochim. Acta* **62**, 265-271.
- ADAM, P., SCHMID, J.C., ALBRECHT, P. i CONNAN, J. (1991) 2α and 3β steroid thiols from reductive cleavage of macromolecular petroleum fraction. *Tetrahedron Lett.* **32**, 2955-2958.
- ADAM, P., SCHMID, J.C., MYCKE, B., STRAZIELLE, C., CONNAN, J., HUN, A., RIVA, A. i ALBRECHT, P. (1993) Structural investigations of nonpolar sulfur cross-linked macromolecules in petroleum. *Geochim. Cosmochim. Acta* **57**, 3395-3419.
- AIZENSHTAT, Z., BAEDECKER, M.J. i KAPLAN, I.R. (1973) Distribution and diagenesis of organic compounds in JOIDES sediment from Gulf of Mexico and Western Atlantic. *Geochim. Cosmochim. Acta* **37**, 1881-1898.
- AKASHI, T., FURUNO, T., TAKAHASHI, T. i AYABE, S.I. (1994) Biosynthesis of triterpenoids in cultured cells, and regenerated and wild plant organs of *Taraxacum officinale*. *Phytochem.* **36**, 303-308.
- AKIHISA, T., YASUKAWA, K., OINUMA, H., KASAHARA, Y., YAMANOUCHI, S., TAKIDO, M., KUMAKI, K. i TAMURA, T. (1996) Triterpene alcohols from the flowers of *Compositae* and their anti-inflammatory effects. *Phytochem.* **43**, 1255-1260.
- ALAN, M., SANSING, T.B., BUSBY, E.L., MARTÍNEZ, D.R. i RAY, S. M. (1979) Dinoflagellate sterols. I. Sterols of the dinoflagellates of *Gonyaulax species*. *Steroids* **33**, 197-203.
- ALBAIGÉS, J. i ALBRECHT, P. (1979) Fingerprinting marine pollutant hydrocarbons by computerized gas chromatography mass spectrometry. *Intern. J. Environ. Chem.* **6**, 171-190.
- ALBAIGÉS, J., ALGABA, J., CLAVELL, E. i GRIMALT, J. (1986) Petroleum geochemistry of the Tarragona Basin (Spanish Mediterranean off-shore). Adv. Org. Geochemistry 1985. *Org. Geochem.* **10**, 441-450.

- ALBAIGÉS, J., ALGABA, J. i GRIMALT, J.O. (1984a) Extractable and bound neutral lipids in some lacustrine sediments. *Org. Geochem.* **6**, 223-236.
- ALBAIGÉS, J., GRIMALT, J.O., BAYONA, J.M., RISEBROUGH, R., DE LAPPE, B. i WALKER, II.W. (1984b) Dissolved, particulate and sedimentary hydrocarbons in a deltaic environment. *Org. Geochem.* **6**, 237-248.
- ALBRO, P.W. (1976) Bacterial waxes. A *Chemistry and Biochemistry of Natural Waxes* (Eds. P.E. Kolattukudy), 419-450. Elsevier.
- ALEXANDER, G., HAZAI, I., GRIMALT, J.O. i ALBAIGÉS, J. (1987) Occurrence and transformation of phyllocladane in brown coals from Nograd Basin, Hungary. *Geochim. Cosmochim. Acta* **51**, 2065-2073.
- ALLEN, J.E., FORNEY, F.W. i MARKOVETZ, A. J. (1971) Microbial subterminal oxidation of alkanes and alkenes. *Lipids* **6**, 448-457.
- AMBLES, A., JACQUESY, J.C., JAMBU, P., MAYOUNGOU, P., OKOME-MINTSA, M., HITA, C. i PARLANTI, E. (1993) High molecular weight lipids present in soil. Nature and origin. A *Organic Geochemistry. Poster Sessions from the 16th International Meeting on Organic Geochemistry*, Stavanger, Noruega, 22-24 September, 1993 (Editat per Øygard K.), pp. 668-671. Falch Hurtigtrykk, Oslo.
- ANADÓN, P. (1992) El registre sedimentari en el domini catalano-valencià. *Història Natural dels Països Catalans* **2**, 297-359. Enciclopèdia Catalana, S.A., Barcelona.
- ANADÓN, P., CABRERA, L., JULIÀ, R., ROCA, E. i ROSELL, L. (1989a) Lacustrine oil shale basins in tertiary grabens from NE Spain (Western European rift system). Record of lacustrine basins and their environmental signals. *Paleogeogr. Paleoclimatol. Paleoecol.* **70**, 7-28.
- ANADÓN, P., CABRERA, L., COLLDEFORNIS, B. i SÁEZ, A. (1989b) Los sistemas lacustres del Eoceno superior y Oligoceno del sector oriental de la cuenca del Ebro. *Acta Geol. Hisp.* **24**, 205-230.
- ANADÓN, P., CAWLEY, J. i JULIÀ, R. (1988) Source rocks in lacustrine sequences from tertiary grabens, western mediterranean rift system, Northeast Spain. *Am. Assoc. Petr. Geol. Bull.* **72**, 983.
- ANDERSON, K.B. i BOTTO, R.E. (1993) The nature and fate of natural resins in the geosphere-III. Re-evaluation of the structure and composition of *Highgate Copalite* and *Glessite*. *Org. Geochem.* **20**, 1027-1038.
- ANDERSON, R. i HUANG, Y. (1992) Fatty acids are precursors of alkylamines in *Deinococcus radiodurans*. *J. Bacteriol.* **174**, 7168-7173.

- ANDERSON, K.B. i WINANS, R.E. (1991) The nature and fate of natural resins in the geosphere-I. Evaluation of pyrolysis-gas chromatography-mass spectrometry for the analysis of natural resins and resinites. *Anal. Chem.* **63**, 2901-2908.
- ANDERSON, K.B., WINANS, R.E. i BOTTO, R.E. (1992) The nature and fate of natural resins in the geosphere-II. Identification, classification and nomenclature of resinites. *Org. Geochem.* **18**, 829-841.
- AQUINO NETO, F.R., TRENDL, J.M., RESTLE, A., CONNAN, J. i ALBRECHT, P. (1983) Occurrence and formation of tricyclic and tetracyclic terpanes in sediments and petroleum. A *Advances in Organic Geochemistry 1981* (Eds. M. Bjorøy et al.), John Wiley, Chichester, 659-667.
- ARPINO, P., ALBRECHT, P. i OURISSON, G. (1970) Series homologues aliphatiques dans un sediment Eocene d'origine lacustrine. *C. R. Acad. Sci.* **270**, 1760-1763.
- BACHMANN, M. i WILLEMS, H. (1996) High-frequency cycles in the upper Aptian carbonates of the Organyà basin, EN Spain. *Geol. Rundsch.* **85**, 586-605.
- BACKMEULEN, J. (1983) Geochemistry of crude oils from Venezuela. *A.A.P.G. Bull.* **67**, 242-276.
- BAKER, E.A. i MARTIN, J.T. (1963) Cutin of plant cuticles. *Nature* **199**, 1268-1270.
- BALLANTINE, J. LAVIS, A. i MORRIS, R. (1979) Sterols of the phytoplankton-effects of illumination and growth stage. *Phytochem.* **18**, 1459-1466.
- BARAKAT, A.O. i RULLKÖTTER, J. (1991) Polar lipids in sulphur-rich black shales from the Nördlinger Ries (South Germany). A *Organic Geochemistry: Advances and Applications in Energy and the Natural Environment*. 15th International Meeting of the European Association of Organic Geochemistry, Manchester, England, September, 1991. Poster Abstracts, eds David Manning, pp. 473-475. A.I.G.O.A., Manchester University Press, Manchester. Anglaterra.
- BARAKAT, A.O. i RULLKÖTTER, J. (1995) Extractable and bound fatty acids in core sediments from the Nördlinger Ries, southern Germany. *Fuel* **74**, 416-425.
- BARAKAT, A.O. i RULLKÖTTER, J. (1998) Product distribution from oxidative degradation of sulphur-rich kerogens from the Nördlinger Ries (Southern Germany). *Fuel* **77**, 85-94.
- BARAKAT, A.O. i YEN, T.F. (1990) Distribution of pentacyclic triterpenoids in Green River oil shale kerogen. *Org. Geochem.* **15**, 299-311.
- BARAKAT, A.O., PEAKMAN, T.M. i RULLKÖTTER, J. (1994) Isolation and structural characterization of 10-oxo-octadecanoic acid in some lacustrine sediments from the Nördlinger Ries (southern Germany). *Org. Geochem.* **223**, 841-847.

- BARNATHAN, G., KORNPORST, J.M., DOUMENQ, P. i MIRALLES, J. (1996) New unsaturated long-chain fatty acids in the phospholipids from the Axinellida sponges *Trikenrion loeve* i *Pseudaxinella* cf. *Lunaecharta*. *Lipids* **31**, 193-200.
- BARBÉ, A., GRIMALT, J.O., PUEYO, J.J. i ALBAIGÉS, J. (1990) Characterization of model evaporitic environments through the study of lipid components. *Org. Geochem.* **16**, 815-828.
- BARNES, M.A. i BARNES, W.C. (1983) Oxidic and anoxic diagenesis of diterpenes in lacustrine sediments. *Adv. Org. Geochem.* 1981 (Eds. Bjorøy *et al.*), 289-298. Wiley & Sons.
- BARRETT, S.M., VOLKMAN, J.K. i DUNSTAN, G.A. (1995) Sterols of 14 species of marine diatoms (Bacillariophyta). *J. Phycol.* **31**, 360-369.
- BARRICK, R.C., HEDGES, J.I. i PETERSON, M.L. (1980) Hydrocarbon geochemistry of the Puget Sound region-I. Sedimentary acyclic hydrocarbons. *Geochim. Cosmochim. Acta* **44**, 1349-1362.
- BAYONA, J.M., GRIMALT, J.O., ALBAIGÉS, J., WALKER, W.I., DE LAPPE, B.W. i RISEBROUGH, R.W. (1983) Recent contribution of high resolution gas chromatography to the analysis of environmental hydrocarbons. *High Resol. Chromatogr. Column Chromatogr.* **6**, 605-611.
- BEHRENS, A., SCHAEFFER, P. i ALBRECHT, P. (1997) 14 β ,22R-Epithiosteranes, a Novel Series of Steroids Widespread in Sediments. *Tetrahedron Lett.* **27**, 4921-4924.
- BEHRENS, A., WILKES, H., SCHAEFFER, P., CLEGG, H. i ALBRECHT, P. (1998) Molecular characterization of organic matter in sediments from the Keg River formation (Elk Point group), western Canada sedimentary basin. *Org. Geochem.* **29**, 1905-1920.
- BELT, S.T., COOKE, D.A., HIRD, S.J. i ROWLAND, S. (1994) Structural determination of a highly branched C₂₅ sedimentary isoprenoid biomarker by NMR spectroscopy and mass spectrometry. *J. Chem.Soc., Chem. Commun.* **18**, 2077-2078.
- BELT, S.T., COOKE, D.A., ROBERT, J.M. i ROWLAND, S. (1996) Structural characterization of widespread polyunsaturated isoprenoid biomarkers: A C₂₅ triene, tetraene and pentaene from the *Haslea ostrearia* Simonsen. *Tetrahedron Lett.* **37**, 4755-4758.
- BENALIOULHAJ, S., SCHREIBER, B.C., PHILP, R.P. i LANDAIS, P. (1993) Assessment of biomarkers characteristic of hypersalinity using artificial maturation on sediments from diverse evaporitic environments. A *Organic Geochemistry. Poster Sessions from the 16th International Meeting on Organic Geochemistry*, Stavanger, Noruega, 22-24 September, 1993 (Editat per Øygard K.), pp. 532-535. Falch Hurtigtrykk, Oslo.

- BENNETT, G., HARRISON, L.J., SIA, G.L. i SIM, K.Y. (1993) Triterpenoids, tocotrienols and xanthenes from the bark of *Cratoxylum cochinchinense*. *Phytochem.* **32**, 1245-1251.
- BENTALEB, I., PELEJERO, C. i GRIMALT, J.O. (1997) Short Term Variability of Euphotic Zone Particulate Sterols and Alkenones in Open Northwestern Mediterranean Waters. A *Organic Geochemistry*. 18th International Meeting on Organic Geochemistry, Maastricht, The Netherlands, 22-26 September, 1997. Abstracts Part II, pp. 637-638. Forschungszentrum Jülich, Alemanya.
- BERÁSTEGUI, X., GARCIA-SENZ, J.M. i LOSANTOS, M. (1990) Tecto-sedimentary evolution of the Organyà extensional basin (central south Pyrenean unit, Spain) during the Lower Cretaceous. *Bull. Soc. Geol. France*, VI, **2**, 251-264.
- BERÁSTEGUI, X., LOSANTOS, M., MUÑOZ, J.A. i PUIGDEFABREGAS, C. (1993) Tall geològic del Pirineu Central 1/200.000. *Publ. Geol. Catalunya Inst. Cartogràfic de Catalunya*, 17-23.
- BERDIÉ, L., GRIMALT, J.O. i GJESSING, E.T. (1995) Combined fatty acids and amino acids in the dissolved + colloidal and particulate fractions of the waters from a dystrophic lake. *Org. Geochem.* **23**, 343-353.
- BERTI, G. i BOTTARI, F. (1968) Constituents of ferns. *Progres in Phytochemistry* **1**, 589-685. (Eds. Reinhold i Lipschitz) Interscience.
- BETTS, S.H., SINNINGHE DAMSTÉ, J.S., DE LEEUW, J.W. i HOFMANN, P. (1991) Facies determination in a Tertiary evaporitic sequence (Mulhouse Basin, France) with an emphasis on the assessment of palaeosalinity: a molecular organic geochemical approach. A *Organic Geochemistry: Advances and Applications in Energy and the Natural Environment*. 15th International Meeting of the European Association of Organic Geochemistry, Manchester, England, September, 1991. Poster Abstracts, eds David Manning, pp. 343-345. A.I.G.O.A., Manchester University Press, Manchester. Anglaterra.
- BIANCHI, G., VLAHOV, G., ANGLANI, C. i MURELLI, C. (1993) Epicuticular wax olive leaves. *Phytochem.* **32**, 49-52.
- BIEGER, T., ABRAJANO, T.A. i HELLOU, J. (1997) Generation of biogenic hydrocarbons during a spring bloom in Newfoundland coastal (NW Atlantic) waters. *Org. Geochem.* **26**, 207-218.
- BISSERET, P., ZUNDEL, M. i ROHMER, M. (1985) Prokaryotic triterpenoids. 2. 2 β -Methylhopanoids from *Methylobacterium organophilum* and *Nostoc muscorum*, a new series of prokaryotic triterpenoids. *Eur. J. Biochem.* **150**, 29-34.
- BJÖRKHEM, I. i HAMBERG, M. (1971) ω -Oxidation of fatty acids II. Enzymatic oxido-reduction of 17-hydroxystearic acid. *J. Biol. Chem.* **246**, 7417-7420.

- BLUM, O., DONG, S., BUCHS, A. i GÜLAÇAR, F.O. (1995) Potential of cutin hydroxyacids as palaeoenvironmental molecular indicators. A *Organic Geochemistry: Developments and Applications to Energy, Climate, Environment and Human History*. 17th International Meeting on Organic Geochemistry, San Sebastián, Spain, 4-8 September, 1995. Abstracts, eds J. Grimalt i C. Dorronsoro, pp. 875-877. A.I.G.O.A., Donostia-San Sebastián, Espanya.
- BOON, J.J., DE LANGE, F., SCHUYL, P.J.W., DE LEEUW, J.W. i SCHENCK, P.A. (1977a) Organic geochemistry of Walvis Bay diatomaceous ooze II. Occurrence and significance of hydroxy fatty acids. *Adv. Org. Geochem.* 1975 (Eds. Campos i Goñi) 255-272. Enadimsa.
- BOON, J.J., DE LEEUW, J.W., HOECK, V.G. i VOSJAN, J.H. (1977b) The significance of taxonomical value of *iso*- and *anteiso*-monoenoic fatty acids and branched-hydroxy acids in *Desulfovibrio desulfuricans*. *J. Bacteriol.* **129**, 1183-1191.
- BOON, J.J., DE LEEUW, J.W. i SCHENCK, P.A. (1978a) Organic geochemistry of Walvis Bay diatomaceous ooze – I. Occurrence and significance of the fatty acids. *Geochim. Cosmochim. Acta* **39**, 1559-1565.
- BOON, J.J., DE LEEUW, J.W. i BURLINGAME, A.L. (1978b) Organic geochemistry of Walvis Bay diatomaceous ooze – III. Structural analysis of the monoenoic and polycyclic fatty acids. *Geochim. Cosmochim. Acta* **41**, 631-639.
- BOON, J.J., HINES, H., BURLINGAME, A.L., KLOK, J., RIJSPTRA, W.I.C., DE LEEUW, J.W., EDMUNDS, K.E. i EGLINTON, G. (1983) Organic geochemical studies of Solar Lake laminated cyanobacterial mats. *Adv. Org. Geochem.* 1981 (Eds. Bjorøy *et al.*) 207-227. Wiley & Sons.
- BOON, J.J., RIJPSTRA, W.I., DE LEEUW, J. W. i SCHENCK, P.A. (1975) Phytanic acid in sediments. *Nature* **258**, 414-416.
- BOON, J.J., RIJPSTRA, W.I., DE LANGE, F., DE LEEUW, J. W., YOSHIOKA, M. i SHIMIZU, Y. (1979) Black Sea sterol -a molecular fossil for dinoflagellate blooms. *Nature* **277**, 125-127.
- BORDET, C. i MICHEL, G. (1969) Structure et biogenèse des lipides a haut poids moleculaire de *Nocardia asteroides*. *Bull. Soc. Chim. Biol.* **51**, 527-548.
- BOSCH, H.J., SINNINGHE DAMSTÉ, J.S. i DE LEEUW, J.W. (1997) Molecular Paleontology of Late Neogene Lacustrine rhythmites of the Florida-Kozani Basin (NW Greece). A *Organic Geochemistry*. 18th International Meeting on Organic Geochemistry, Maastricht, The Netherlands, 22-26 September, 1997. Abstracts Part II, pp. 671-672. Forschungszentrum Jülich, Alemanya.
- BOTTARI, F., MARSILI, A., MORELLI, I. i PACCHIANI, M. (1972) Aliphatic and triterpenoid hydrocarbons from ferns. *Phytochem.* **11**, 2519-2523.

- BOULOUBASSI, I., GUEHENNEUX, G. i RULLKÖTTER, J. (1997) Organic matter origin and preservation in Mediterranean Pliocene-Pleistocene sapropels. A *Organic Geochemistry*. 18th International Meeting on Organic Geochemistry, Maastricht, The Netherlands, 22-26 September, 1997. Abstracts Part I, pp. 479-480. Forschungszentrum Jülich, Alemanya.
- BRASSELL, S.C. (1980) The lipids of deep sea sediments; their origin and fate in Japan Trench. Tesi Doctoral. Universitat de Bristol.
- BRASSELL, S.C., COMET, P.A., EGLINTON, G., ISAACSON, P.J., MCEVOY, J., MAXWELL, J.R., THOMSON, I.D., TIBBETS, P.J., VOLKMAN, J.K. (1980) The origin and fate of lipids in the Japan Trench. *Adv. Org. Geochem.* 1979 (Eds. Douglas i Maxwell) 375-392. Pergamon Press.
- BRASSELL, S.C., EGLINTON, G. i MAXWELL, J.R. (1983) The geochemistry of terpenoids and steroids. *Biochem. Soc. Trans.* **11**, 575-586.
- BRASSELL, S.C., LEWIS, C.A., DE LEEUW, J.W., DE LANGE, F. i SINNINGHE DAMSTÉ, J.S. (1986) Isoprenoid tiophenes: novel products of sediment diagenesis?. *Nature* **320**, 160-161.
- BRASSELL, S.C., WARDROPER, A.M.K., THOMSON, I.D., MAXWELL, J.R. i EGLINTON, G. (1981) Specific acyclic isoprenoids as biological markers of methanogenic bacteria in marine sediments. *Nature* **290**, 693-696.
- BROOKS, J.D., GOULD, K. i SMITH, J.W. (1969) Isoprenoid hydrocarbons in coal and petroleum. *Nature*, **222**, 257-259.
- BROOKS, C.J.W., HORNING, E.C. i YOUNG, J.S. (1968) Characterization of Sterols by Gas Chromatography-Mass Spectrometry of the Trimethylsilyl Ethers. *Lipids* **3**, 391-402.
- BROOKS, P.W. (1986) Unusual biological marker geochemistry of oils and possible source rocks, offshore Beaufort-Mackenzie delta, Canada. *Org. Geochem.* **10**, 401-406.
- BROOKS, P.W., EGLINTON, G., GASKELL, S.J., MCHUGH, D.J., MAXWELL, J.R. i PHILP, R.P. (1977) Lipids of recent sediments, part II. Branched and cyclic alkanes and alkanolic acids of some temperate lacustrine and sub-tropical lagoonal/tidal-flat sediments. *Chem. Geol.* **20**, 189-204.
- BROOKS, P.W., MAXWELL, J.R. i PATIENCE, R.L. (1978) Stereochemical relationships between phytol and phytanic acid, dihydrophytol and C₁₈ ketone in recent sediments. *Geochim. Cosmochim. Acta* **42**, 1175-1180.
- BUDZIKIEWICZ, H., WILSON, J.M. i DJERASSI, C. (1963) Mass spectrometry in structural and stereochemical problems. XXXII. Pentacyclic triterpenes. *J. Am. Chem. Soc.* **85**, 3688-3699.

- BUDZINSKI, H., GARRIGUES, P., CONNAN, J., DEVILLERS, J., DOMINE, D., RADKE, M. i OUDIN, J.L. (1995) Alkylated Phenanthrene Distributions as Maturity and Origin Indicators in Crude Oils and Rock Extracts. *Geochim. Cosmochim. Acta* **59**, 2043-2056.
- CABRERA, L. (1983) Estratigrafia y sedimentologia de las formaciones lacustres del tránsito Oligoceno-Mioceno del SE de la Cuenca de Ebro. Tesi Doctoral, Universitat de Barcelona.
- CABRERA, L. (1992) Les parts centrals del sector català: L'Oligocè. *Història Natural dels Països Catalans* **2**, 181-205. Enciclopèdia Catalana, S.A., Barcelona.
- CABRERA, L. i GAUDANT, J. (1986) Ciprínidos (Pisces) del sistema lacustre oligocénico-miocénico de Los Monegros (sector SE de la cuenca del Ebro, províncias de Lleida, Tarragona, Huesca y Zaragoza). *Acta Geol. Hisp.* **20**, 219-226.
- CABRERA, L. i SÁEZ, A. (1987) Coal deposition in carbonate-rich shallow lacustrine systems: the Calaf and Mequinenza sequences (Oligocene, eastern Ebro Basin, NE Spain). *J. Geol. Soc. London* **144**, 451-461.
- CABRERA, L., COLOMBO, F. i ROBLES, S. (1985) Sedimentation and tectonics interrelationships in the Paleogene marginal alluvial systems of the Ebro Basin. Transition from alluvial to shallow lacustrine environments. *6th Europ. Reg. Meeting I.A.S. Exc. Guidebook* **10**, 393-492.
- CABRERA, M. i DE LAS HERAS, F.X. (1997) The distribution and ratios of aliphatic and aromatic hydrocarbons as indicators of oil generation, maturity and depositional environment of sulphur-rich oil source rocks. A *Organic Geochemistry*. 18th International Meeting on Organic Geochemistry, Maastricht, The Netherlands, 22-26 September, 1997. Abstracts Part I, pp. 609-610. Forschungszentrum Jülich, Alemanya.
- CABRERA, M., GORCHS, R., GARCIA, J. i DE LAS HERAS, F.X. (1997) Unsaturated biomarkers as new clues in sulphur-rich sedimentary rocks. A *Organic Geochemistry*. 18th International Meeting on Organic Geochemistry, Maastricht, The Netherlands, 22-26 September, 1997. Abstracts Part I, pp. 499-500. Forschungszentrum Jülich, Alemanya.
- CALDICOTT, A.B. i EGLINTON, G. (1976) Cutin acids from Briophytes: an ω -1 hydroxy alcanoic acid i two liverwort species. *Phytochem.* **15**, 1139-1143.
- CAMPILLO, D. i GIBERT, J. (1996) El hombre de Orce. *Investigación y Ciencia* **234**, 64-69.
- CANUEL, E.A. i MARTENS, C.S. (1993) Seasonal variations in the sources and alteration of organic matter associated with recently-deposited sediments. *Org. Geochem.* **20**, 563-577.

- CAPELLA, P. (1968) Mass Spectra of Long Chain Hydroxyesters. *Adv. Mass Spectrom.* **4**, 196-197.
- CAPLAN, M.L. i BUSTIN, R.M. (1999) Palaeoceanographic controls on geochemical characteristics of organic-rich Exshaw mudrocks: role of enhanced primary production. *Org. Geochem.* **30**, 161-188.
- CARBALLEIRA, N.M., EMILIANO, A., RODRÍGUEZ, J. i REYES, E.D. (1992) Isolation and characterization of novel 2-hydroxy fatty acids from phospholipids of the sponge *Smenospongia aurea*. *Lipids* **27**, 681-685.
- CARBONELL, E., DE CASTRO, J.M.B., ARSUAGA, J.L., DÍEZ, J.C., ROSAS, A., CUENCA-BESCÓS, G., SALA, R., MOSQUERA, M. i RODRÍGUEZ, X.P. (1995) Lower Pleistocene Hominids and Artifacts from Atapuerca-TD6 (Spain). *Science* **269**, 826-830.
- CARDOSO, J.N. i CHICARELLI, M.I. (1983) The organic geochemistry of the Paraíba valley and Maraú oil shales. *Adv. Org. Geochem.* 1981 (Eds. Bjorøy *et al.*) 828-833. Wiley & Sons.
- CARDOSO, J.N. i EGLINTON, G. (1983) The use of hydroxyacids as geochemical indicators. *Geochim. Cosmochim. Acta* **47**, 723-730.
- CARDOSO, J.N., EGLINTON, G. i HOLLOWAY, P.J. (1977) The use of cutin acids in the recognition of higher plant contribution to recent sediments. *Adv. Org. Geochem.* 1975 (Eds. Campos i Goñi) 273-287. Enadimsa.
- CARDOSO, J.N., GASKELL, S.J., QUIRK, M.M. i EGLINTON, G. (1983) Hidroxy and fatty acid distributions in Rostherne Lake sediments (England). *Chem. Geol.* **38**, 107-128.
- CARDOSO, J.N., WATTS, C.D., MAXWELL, J.R., GOODFELLOW, R., EGLINTON, G. i GOLUBIC, S. (1978) A biogeochemical study of Abu Dhabi algal mats: a simplified ecosystem. *Chem. Geol.* **23**, 273-291.
- CASAGRANDE, D.J. (1987) Sulphur in peat and coal. *Geol. Soc. London Spec. Publ.* **32**, 87-105.
- CASSANI, F., GALLANGO, O., TALUKDAR, S., VALLEJOS, C. i EHRMAN, U. (1988) Methylphenanthrene maturity index of marine source rock extracts and crude oils from the Maracaibo Basin. *Org. Geochem.* **13**, 73-80.
- CHAFFEE, A.L. i JOHNS, R.B. (1985) Aliphatic components of Victorian brown coal. *Org. Geochem.* **8**, 349-365.
- CHAFFEE, A.L., HOOVER, D.S., JOHNS, R.B. i SCHWEIGHARD, F.K. (1986) Biological markers extractable from coal. "Biological markers in the sedimentary record" (Eds. Johns) 311-345. Elsevier.

- CHAKHMAKHCHEV, A. i SUZUKI, N. (1995a) Aromatic sulfur compounds as indicators for petroleum from the Buzuluk depression, Russia. *Org. Geochem.* **23**, 617-625.
- CHAKHMAKHCHEV, A. i SUZUKI, N. (1995b) Saturate biomarkers and sulfur compounds in oils and condensates from different source rock lithologies of Kazakhstan, Japan and Russia. *Org. Geochem.* **23**, 289-299.
- CHAKHMAKHCHEV, A., SAMPEI, Y. i SUZUKI, N. (1994) Geochemical characteristics of oils source rocks in the Yamal peninsula, West Siberia, Russia. *Org. Geochem.* **22**, 311-322.
- CHANDLER, R.F. i HOOPER, S.N. (1979) Friedelin and associated triterpenoids. *Phytochem.* **18**, 711-724.
- CHICARELLI, M.I., DAMASCENO, L.P. i CARDOSO, J.N. (1984) Diagenetic chemistry of Paraíba Valley oil shale. *Org. Geochem.* **6**, 153-155.
- CHO, K.Y. i SALTON, M.R.J. (1966) Fatty acid composition of bacterial membrane and wall lipids. *Biochim. Biophys. Acta* **116**, 73-79.
- CHUECAS, L. i RILEY, J.P. (1969) Component fatty acids of the total lipids of some marine phytoplankton. *J. Mar. Biol. Assoc. U.K.* **49**, 97-116.
- CLARK, J.P. i PHILP, R.P. (1989) Geochemical characterization of evaporite and carbonate depositional environment and correlation of associated crude oils in the Black Creek Basin, Alberta. *Bull. Canad. Petrol. Geol.* **37**, 401-416.
- CLOSAS, A. (1948) Los Carbones minerales de Cataluña. *Publicaciones del Instituto Geológico Provincial de Barcelona*. Miscelánea Almera 2ª parte, 61-193.
- COLLISTER, J.W., SUMMONS, R.E., LICHTFOUSE, E. i HAYES, J.M. (1992) An isotopic biogeochemical study of the Green River oil shale. *Org. Geochem.* **19**, 265-276.
- COLOMBO, J.C., SILVERGER, N. i GEARING, J.N. (1996) Lipid biogeochemistry in the Laurentian Trough:I. Fatty acids, sterols and aliphatic hydrocarbons in rapidly settling particles. *Org. Geochem.* **25**, 211-225.
- COLOMBO, J.C., SILVERGER, N. i GEARING, J.N. (1997) Lipid biogeochemistry in the Laurentian Trough:II. Changes in the composition of fatty acids, sterols and aliphatic hydrocarbons during early diagenesis. *Org. Geochem.* **26**, 257-274.
- CONNAN, J. i CASSOU, A.M. (1980) Properties of gases and petroleum liquids derived from terrestrial kerogen at various maturation levels. *Geochim. Cosmochim. Acta*, **44**, 1-23.

- CONNAN, J., BOROULLETC, J., DESSORT, D. i ALBRECHT, P. (1986) The microbial input in a carbonate-anhydrite facies of a sabkha palaeoenvironment from Guatemala: A molecular approach. *Org. Geochem.* **10**, 29-50.
- CONNAN, J., NISSENBAUM, A. i DESSORT, D. (1992) Molecular archaeology: Export of Dead Sea asphalt to Canaan and Egypt in the Chalcolithic-Early Bronze Age (4th-3rd millenium BC). *Geochim. Cosmochim. Acta* **56**, 2743-2759.
- COOPER, W.J. i BLUMER, M. (1968) Linear iso- and anteiso-fatty acids in recent sediments of the North Atlantic. *Deep Sea Res.* **15**, 535-540.
- COUDERC, F. (1995) Gas-Chromatography/Tandem mass spectrometry as an analytical tool for the identification of fatty acids. *Lipids* **30**, 691-699.
- CRANWELL, P.A. (1973) Branched-chain and cyclopropanoid acids in a recent sediment. *Chem. Geol.* **11**, 307-313.
- CRANWELL, P.A. (1974) Monocarboxylic acids in lake sediments: indicators, derived from terrestrial and aquatic biota, of paleoenvironmental trophic levels. *Chem. Geol.* **14**, 1-14.
- CRANWELL, P.A. (1976) Decomposition of aquatic biota and sediment formation: lipid components of two blue-green algal species and of detritus resulting from microbial attack. *Freshwater Biol.* **6**, 481-488.
- CRANWELL, P.A. (1977) Organic geochemistry of Cam Loch (Sutherland) sediments. *Chem. Geol.* **20**, 205-221.
- CRANWELL, P.A. (1978) Extractable and bound lipid components in a freshwater sediment. *Geochim. Cosmochim. Acta* **42**, 1523-1532.
- CRANWELL, P.A. (1980) Branched/cyclic alkanols in lacustrine sediments (Great Britain): recognition of *iso*- and *anteiso*- branching and stereochemical analysis of homologous alkan-2-ols. *Chem. Geol.* **30**, 15-26.
- CRANWELL, P.A. (1981) Diagenesis of free and bound lipids in terrestrial detritus deposited in a lacustrine sediment. *Org. Geochem.* **3**, 79-89.
- CRANWELL, P.A. (1982) Lipids of aquatic sediments and sedimenting particulates. *Prog. Lipid Res.* **21**, 271-308.
- CRANWELL, P.A. (1984) Lipid geochemistry of sediments from Upton Broad, a small productive lake. *Org. Geochem.* **7**, 25-37.
- CRANWELL, P.A. (1985) Long-chain unsaturated ketones in recent lacustrine sediments. *Geochim. Cosmochim. Acta* **49**, 1545-1551.