

{rokbox title=|Annual mean and seasonal variation of surface primary production (Chl a) ::

Image: Authors|

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Andrea Gori, Imma Tolosa, **Covadonga Orejas**, **Lucia Rueda**, Núria Viladrich, Jordi Grinyó, Sascha Flögel, Renaud Grover, Christine Ferrier-Pagès, 2018.

[Biochemical composition of the cold-water coral](#)

[*Dendrophyllia cornigera*](#)

[under contrasting productivity regimes: Insights from lipid biomarkers and compound-specific isotopes.](#)

Deep Sea Research Part I: Oceanographic Research Papers. Volume 141, November 2018, Pages 106-117.

Abstract: The cold-water coral (CWC) *Dendrophyllia cornigera* is widely distributed in areas of both high and low productivity, suggesting a significant trophic plasticity of this coral depending on the food available in the environment. In this study, lipid biomarkers and their isotopic signature were compared in colonies of

D. cornigera

and sediment from the highly productive Cantabrian Sea (Northeast Atlantic Ocean) and the less productive Menorca Channel (Western Mediterranean Sea). Lipid content and composition in coral tissue clearly reflected the contrasting productivity in the two areas. Cantabrian corals presented higher content in fatty acids (FA), fatty alcohols and sterols than Menorca corals.

Energy storage (saturated + mono-unsaturated FA) to structural (poly-unsaturated FA) ratio was higher in Cantabrian than in Menorca corals. The high $\Sigma C20:1$ content as well as PUFA(n-3)/PUFA(n-6) ratio suggest that Cantabrian corals mainly feed on phytoplankton and herbivorous grazers. This is also supported by the higher mono-unsaturated fatty alcohols (MUOH) and long chain mono-unsaturated fatty alcohols (LCMUOH) content in Cantabrian compared to Menorca corals. Conversely, higher PUFA(n-6) content in Menorca corals, with the dominance of C22:4(n-6) and C20:4(n-6), as well as the dominance of cholesterol and norC27 $\Delta 5,22$ among sterols, point to a higher trophic role of dinoflagellates and invertebrates. The observed geographical variability in trophic ecology supports a high trophic plasticity of *D. cornigera*

, which may favour the wide distribution of this CWC in areas with highly contrasted food availability.

Keywords: Cold-water corals, Lipids, Fatty acids, Fatty alcohols, Sterols, Compound-specific stable isotopes, Cantabrian Sea, Mediterranean Sea