



An endemic post-CTB *Pseudorhapydionina* (foraminifera) from the Pyrenean palaeobioprovince

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The genus *Pseudorhapydionina* and its allies are porcelaneous ranging from cylindrical to fan-shaped larger benthic foraminifera (LBF), with planispiral-involute chamber arrangement becoming uncoiled or flabelliform-to-cyclical in adult stages. The apertural face has pierced by multiple cribrate openings. The marginal chamber lumen is partially subdivided by subepidermal plates, while the central area might or might not present pillars. They characterise latest Albian?-Cenomanian (Middle Cretaceous Global Community Maturation Cycle) shallow-water carbonate deposits from Mexico (Caribbean LBF palaeobioprovince) to the Iberian Peninsula, Italy, Greece, Middle East and North of Africa (western, central and eastern Tethyan LBF palaeobioprovinces, respectively), but they have never been found in the Pyrenean palaeobioprovince.

It is widely accepted that pseudorhapydioninids and other groups of larger benthic foraminifera, such as alveolinids, with an extreme or moderate K-strategy of life disappear near the Cenomanian-Turonian boundary (CTB), when a major extinction took place in both shallow and deep marine realms. However, it seems that some Cenomanian genera, such as *Cyclolina*, *Cyclopsinella*, *Dicyclina*, *Cuneolina*, and *Rotorbinella*, escaped from the extinction during the CTB oceanic anoxic event (OAE2 or Bonarelli Event), but more detailed studies are needed to confirm if taxa at both sides of the boundary are actually related.

New studies in the South-central Pyrenees have shown the occurrence of *Pseudorhapydionina* morphotypes in the shallow-water deposits of the uppermost part of the La Cova limestone, which age constrained by strontium isotope stratigraphy (SIS) is lower Santonian (Late Cretaceous GCMC). These pseudorhapydioninid morphotypes co-occur in the levels containing *Martiguesia cyclamminiformis*, *Ramirezella montsechiensis*, *Lacazina pyrenaica*, *Pseudolacazina loeblichii*, *Palandroxina taxyae*, *Hellenalveolina tappanae*, *Iberorotalia reicheli*, *Calcarinella schaubi* and *Orbitokathina vonderschmitti*, among others. All of this fauna that seems restricted to the Pyrenean palaeobioprovince are late Cretaceous GCMC newcomers.

Thus, the presence of such morphotype in the deposits of the Late Cretaceous GCMC of the Pyrenean palaeobioprovince arises the followings questions: is the Pyrenean taxon a CTB survivor? Or, are we faced with a morphological convergence? Positive answering to the first question would implicate that *Pseudorhapydionina* could have successfully migrated from the western Tethyan (Iberian Basin) to the Pyrenean Basin before the communication was stopped, without reaching an appropriate colonizing area, probably due to the different oceanographic conditions. But, the change of those conditions during the late Coniacian- early Santonian times, as it is demonstrated by the abundance of symbiont-bearing LBF taxa, had favored the installation of *Pseudorhapydionina* in the Santonian shallow-water environments. The hypothesis of a morphological convergence could be explained by the quite simple architecture of the present taxon. Notwithstanding, following the actual taxonomical classification in foraminifera, the presence of radial septula, which does not alternate with the intercameral foramina, and the absence of pillars definitively ascribed our specimens to the genus *Pseudorhapydionina*.