NON-MARINE OSTRACODS OF SOUSA FORMATION (LOWER CRETACEOUS), SOUSA BASIN, NE BRAZIL

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ABSTRACT: Ostracods are microcrustaceans that have a wide stratigraphic range and are documented from continental to deep marine environments. Their carapaces are composed of calcium carbonate and chitin, which improves their preservation in sedimentary rocks. The rapid evolution of this group over geological time makes its members very useful stratigraphic and chronological markers. Ostracods' dynamic evolutionary processes drive species to specific environments, optimizing their use in paleoecological studies. Due to these valuable attributes, non-marine ostracods were chosen to date the deposits of the Sousa Formation, the goal of the present study. The formation is part of the stratigraphic column of the Sousa Basin, which, along with the Uiraúma-Brejo das Freiras and Pombal basins, integrates the Rio do Peixe basin complex. These basins represent small rifts formed during the break-up that occurred in the north of Gondwana in the Lower Cretaceous and is linked to the South-Atlantic event. The individualized rifts captured the drainage system, forming shallow lakes suitable for the development of ostracods. The Sousa Formation covers a wide geographic region, occupying about 70% of the area of the Sousa and Pombal basins, and 50% of the Uiraúna-Brejo das Freiras one. The formation is characterized by the predominance of siltstones and red brownish shales, embedded with fine to medium sandstone (calciferous), as well as marls and limestones. The upper and lower contacts are concordant and gradational. Plane-parallel laminations, wavy marks, contraction cracks, and various fossils are present. The sediments of the Sousa Formation were deposited in a meandering fluvial environment with flood plains and lacustrine environments, under a semi-arid climate, alternating rainy and dry seasons. Despite the numerous trace fossils documented in the formation (footprints of theropods, sauropods and ornithopods), ostracods are poorly studied. Samples collected in well 2-FC-001-PB revealed ostracods in states of preservation that varied from bad to good. Some intervals are rich in complete carapaces. Fragmented carapaces were found in almost all the samples in which ostracods are present. The ostracod frequency is greater in the upper portion of the well than in the lower. The assemblages are comprised of lacustrine ostracods, reinforcing the evidence for rift lake depositional conditions. Ontogenetic series of *Brasacypris ovum* were identified at two stratigraphic levels, suggesting a low-energy depositional environment. The taxonomic analysis of the ostracod specimens allowed the identification of five families of the Podocopida Order (Cyprideidae, Cyprididae, Darwinulidae and Ilyocyprididae) and six *genera* (*Alicenula, Brasacypris, Cypridea, Ilyocypris, Mantelliana* and *Reconcavona*). Cyprideidae is the most diverse family, while Darwinulidae is the most abundant. The remaining families are rare. New ostracod species will be formally proposed within the *genera* Cypridea and Alicenula. *Alicenula leguminella* (Forbes, 1855 *in* Lyell, 1855) Martens, Rossetti and Horne, 2003, *Brasacypris ovum* Krommelbein 1965, *Cypridea ambigua* Krommelbein 1962, and *Reconcavona swaini* Krommelbein 1962 were identified, revealing a typical assemblage of the Lower Cretaceous.

KEYWORDS: NON-MARINE OSTRACODS, SOUSA FORMATION, LOWER CRETACEOUS