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A silicified endocarp of Phytocreneae (Icacinaceae) from the early Paleocene of Patagonia, southern South America.

Icacinaceae are the most diverse family of basal lamiids, comprising c. 34 genera and 200 species with a center of diversity in Indo-Malesia and surrounding old-world tropics. As traditionally circumscribed, Icacinaceae were not monophyletic. Recently, several genera have been transferred to other families based on results from research that has attempted to resolve some of the systematic affinities within the family. Nevertheless, the tribe Phytocreneae comprise a monophyletic group within Icacinaceae and are characterized by bilaterally compressed, unilocular, pitted endocarps. Extant Phytocreneae members are native in tropical habitats of Africa, Madagascar, and Indo-Malesia. We report the discovery of an ovoid, unilocular, bilaterally compressed, and pitted fossil endocarp from the early Paleocene Estancia las Violetas locality, Salamanca Formation, Chubut, Patagonia, Argentina. We documented the external morphology of the fruit and performed high-resolution X-ray CT scanning techniques to reveal the internal structure. The fossil endocarp size fits within those of the Phytocreneae, as well as the wall thickness, and size of the pits. Additionally, the pits are arranged in irregular longitudinal rows, are roughly circular and spaced c. 0.5 mm apart in the equatorial region, but toward the ends of the endocarp they are longitudinally elongate and more densely spaced. Furthermore, the pits are associated with tubercles that protrude into the locule. This unique combination of characters strongly supports an affinity with Phytocreneae. This fossil endocarp is the oldest known occurrence of the family in the Southern Hemisphere and represents the southernmost known occurrence of the Icacinaceae globally. Previous reports from Colombia and Peru yielded fossil endocarps reliably identified as Icacinaceae dating to the middle-late Paleocene and the early Oligocene, respectively. Fossil woods assigned to *Icacinoxylon* are also known from the Cretaceous of Antarctica, but their affinities with Icacinaceae are dubious. The presence of this fossil endocarp in an early Paleocene deposit in southern South America may clarify the biogeographic history of Icacinaceae in Gondwana. As extant members of the Phytocreneae group are exclusively found in the old-world tropics, this discovery provides a biogeographic link between previous neotropical fossil occurrences and the Recent distribution of the tribe.