

Gnetalean macrofossils of the Crato member, Santana Formation, late Aptian – early Albian, Chapada do Araripe, Brazil

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The presence of gnetalean fossils in laminated limestones of the Crato member had been detected through the polyplicated pollen grains that sometimes comprise until 58% of the total palynomorphs. This presence is confirmed by abundant macrofossils of the three families of the Gnetales: Ephedraceae which are represented by vegetative as well as male and female reproductive structures; Welwitschiaceae which can be detected by plantules, leaves in different stages of growth (from 10cm to 120cm), male and female strobili. Gnetaceae have their presence marked by a short mature female spike. The occurrence of these families well differentiated and with their characteristic features suggests a long evolutionary history prior to the early Cretaceous and early family divergence in the Mesozoic of this monophyletic group. It is interesting to note the close association of the three families during the early Cretaceous in Northeastern Brazil. The Ephedraceae and Welwitschiaceae have a very distinct modern and relic geographic distribution, verifying the preference for arid and semi-arid climates. Today the Gnetaceae are restricted to tropical rain forests.