
Phytoliths of characteristic plants from the 'Caatinga' biome, Northeastern Brazil

Sarah Ricardo*^{†1}, Heloisa Coe^{2,3}, Raphaella Dias², and Leandro Sousa⁴

¹Universidade do Estado do Rio de Janeiro (UERJ) – UERJ, Av. Sao Francisco Xavier, 524, Maracana, 20550-900, Rio de Janeiro, Brésil

²Universidade do Estado do Rio de Janeiro (UERJ) – Brésil

³Universidade Federal Fluminense (UFF) – Brésil

⁴Universidade Federal Rural do Semi-árido (UFERSA) – Brésil

Résumé

Located in northeastern Brazil, the 'Caatinga' biome covers about 11% of the country and is characterized by a semi-arid climate with vegetation adapted to high temperatures, low precipitation and uneven rainfall distribution throughout the year. Among the ways in which the plants adapt to the extreme climate, we can mention the loss of foliage during the dry season, reduced leaf blades or leaves transformed into spines and also water accumulation in underground storage organs. The unjustified belief that 'Caatinga' is an ecosystem poor in biodiversity and endemism, make it the most undervalued and botanically unknown Brazilian biome, without any phytolith studies in the region until now. Although some areas have been quite anthropized, the 'Caatinga' has several phytogeographical areas, and a significant number of rare and endemic taxa. 33 characteristic species of the region, belonging to 16 different families (Arecaceae, Anacardiaceae, Apocynaceae, Bignoniaceae, Boraginaceae, Bromeliaceae, Chrysobalanaceae, Erythroxylaceae, Euphorbiaceae, Fabaceae, Malphiaceae, Malvaceae, Myrtaceae, Rhamnaceae, Rubiaceae and Verbenaceae) were analyzed. For the phytolith extraction, the organic matter of collected leaves was burned using a solution of nitric acid 65% and sulfuric acid 95%. The results showed that the analyzed plants are, in general, good phytolith producers, the most prevalent being tracheids, followed by polyhedral, globular granulate, elongate and trichomes, among others. We also observed some phytoliths in this study that we consider as being characteristic of a particular genus / species, as in the case of an elongate found in two species of the genus *Croton* (Euphorbiaceae) and trichomes of *Licania rigida* (Chrysobalanaceae). Another interesting result was the bromeliad *Encholirium spectabile*, where we found a huge production of globular echinate. A variation in the production of phytoliths was also verified for families such as Euphorbiaceae and Fabaceae, where the species production varied from high to non-production of phytoliths. The types of silicification found may be related to the environmental characteristics of the "Caatinga", where plants develop mechanisms against desiccation. The deposition of Si in their cells may be a survival strategy in this environment. Further studies in the region will provide more information on the production of phytoliths by plants of this important biome.

Mots-Clés: Biomineralization

*Intervenant

[†]Auteur correspondant: sarah.fricks@gmail.com