
Phytoliths in the stratigraphic layers of Tarioba Shell Mound (Rio Das Ostras, Rio de Janeiro, Brazil)

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Abstract

Since the beginning of the Holocene, people have occupied the central-south Brazilian coast, as it was a very productive estuarine environment. Living as fishers and mollusk gatherers, they built prehistoric shell mounds up to 30 m high known as sambaquis, which can still be found today, constituting an important testimony of paleodiversity and Brazilian prehistory. The role and function of sambaquis are not completely known, but it is well established that they are artificial buildings where can be found evidence of diverse activities (food processing, artifacts manufacturing, habitation structures, funerary ritual etc.). Most Brazilian shellmounds date from 6000 to 2000 cal, with a few dates up to 9000 cal BP. The aim of this research is to characterize phytoliths from "Sambaqui da Tarioba", a shell mound situated in Rio das Ostras, Rio de Janeiro, Brazil. The sambaqui was excavated in a sector of 1 m² till reaching the natural strata at 110 cm deep. The soil was delayered by artificial 10 cm sections which revealed five archaeological stratigraphic layers (S1 to S5). A sample of mollusk shells (*Iphigenia brasiliensis*) for each of these layers was used for radiocarbon dating. Phytoliths from all five layers were analyzed under optic microscope. They were classified and counted into different types. Data analysis was done using phytoliths D/P and Bi% indices and Principal Component Analysis. Our results indicate an occupation period of 550 yr for the "Sambaqui da Tarioba", with dates ranging between 4,070 cal BP (beginning of occupation) and 3,520 cal BP (occupation ending). Regarding phytolith assemblages, globular granulate and bulliform phytolith types predominate. D/P index (from 0.39 to 4.73) suggests an open forest, and Bi% values indicate a strong water stress. PCA analysis of the phytolith assemblages, presence/absence of charcoal, sponge spicules and diatoms as well as dating and deepness of the archaeological stratigraphic layers revealed three different groups (S2-S3; S4-S5 and S1). These groups are explained by the first component responsible alone for more than 90% of all variation in the data. The first component is representative of the age estimates by C14 method. In conclusion, the analysis of phytoliths composition of the Sambaqui da Tarioba indicates that the vegetation surrounding this archeological site 4000 years ago A.P. consisted of dry forest. This condition seems to have extended over the 500 years that lasted the occupation of this site. Although most data indicate stable floristic and environmental conditions during this period, the PCA analysis indicates some changes over time. We conclude that, despite many biases associated with shell mounds, they still constitute good data repositories on biodiversity and Late Holocene environments.

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