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Carbon isotope in tooth enamel of Pleistocenic megamammals from Alagoas and Pernambuco, northeastern Brazil

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Stable isotopes in tooth enamel are an important tool in the investigation of the paleoecology of extinct organisms and are applied as proxies for different environmental parameters (e.g, diet, temperature, trophic level) that assist in reconstitutions of past environments. $\delta^{13}C$ in bioapatite of mammals is related to diet and is widely used to reconstruct food preferences and food resources availability based on the fact that plants that served as their food performed photosynthesis by different metabolic pathways that produce different $\delta^{13}C$ values. So animals who feed on C3 type of vegetation present $\delta^{13}C$ values less than -8‰, whereas values of $\delta^{13}C$ higher than -2‰ represent the diet based on C4 grasses. Values of $\delta^{13}C$ between -8 ‰ and -2‰ indicate a mixed diet of C3 and C4 plants [1,2,3].

Thirty seven teeth enamel samples of Pleistocenic megamammals from the semiarid of Alagoas and Pernambuco States in Brazil, on latitude 9° S, had $\delta^{13}C$ analyzed to infer their paleodiet and ecological parameters that allow a reconstruction of past environment. Eight samples of *Toxodon sp*., six samples of E*remotherium laurillardi*, one of *Xenorhnotherium baiense* and eight of *Notiomastodon platensis* from the state of Alagoas were analyzed and from the state of Pernambuco, ten samples of *Notiomastodon platensis*, one of an unknown Cervidae and three of *Hippidion* sp.

Our C-isotope data indicate that *N. platensis* was a grazer (-1.04‰ to -0.24‰), fed on C4 plants, while *E. laurillardi* and Toxodon (-8.9‰ to 0.4‰ and -5.3‰ to -0.07‰ respectively), *N. platensis* (-4.7‰ to 1.4‰) had a mixed diet of C3 and C4 plants with predominance of C4 plants in this region. *Hippidion* sp (-9.64‰ to -7.21‰) and Cervidae (-7.69‰), indicating a mixed diet with predominance of C3 plants. *Xenorhinotherium baiense* value (-12.31‰) indicates a diet based on C3 plants.

These results suggest an environment with predominance of C4 plants, typical of arid environments with low-water availability in the soil, suggesting that the area at the time was similar to the current in more arid and open areas of the scrub savannah.

References:

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