

Zinc isotopic fractionation in terrestrial and aquatic food webs

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Recent advances in mass spectrometry now allow the measurement of the isotope ratios of a number of elements in mineralized tissues not usually used for dietary reconstruction. This paper focuses on the application of measurements of zinc (Zn) isotope ratios in modern plants, and bone and teeth of herbivores and carnivores. The samples come from a modern food web located in Koobi Fora, Kenya and an archeological food web preserved in the permafrost from Nunalleq, Alaska. We focus on two small geographical areas and present data for mammals, birds, fishes and reptiles. The Zn isotope measurements data are also compared to previous preliminary results from other food webs. We show that Zn isotopes provide an excellent means to distinguish between carnivores and herbivores. We discuss the influence of marine vs terrestrial as well as polar vs arid environments. We conclude that Zn isotope ratios in bone and dental enamel have a significant potential to be palaeodietary proxies, complementing the information provided by other isotopes.