

TRACE ELEMENT EVIDENCE FOR TROPHIC LEVEL IN EXTANT MAMMALS FROM  
LAIKIPIA, KENYA: IMPLICATIONS FOR EASTERN AFRICAN FOSSIL HOMININ DIET  
RECONSTRUCTIONS

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**Abstract**

Trace element analysis (Sr/Ca, Ba/Ca) has been utilized to gauge diet in fossil hominins. Biopurification of trace elements relative to calcium at higher trophic levels results in lower ratios in carnivorous mammals than in herbivores. Previous work characterizing South African ecosystems has been used to infer meat consumption in *Australopithecus* and *Paranthropus*. Trace element ratios have not yet been reported from modern or fossil eastern African modern ecosystems. Prior to the application to eastern African fossils, a study of eastern African extant mammals from modern ecosystems with analogous floral and faunal community structures as Plio-Pleistocene habitats is warranted. In this study, I analyzed Sr/Ca and Ba/Ca from bulk enamel of 92 individuals representing 32 extant mammal species with known feeding ecologies from the Laikipia District, Kenya. Diet categories include C<sub>4</sub> grazers, C<sub>3</sub> browsers, mixed C<sub>3</sub>-C<sub>4</sub> herbivores, carnivores, and omnivores. I found that Sr/Ca ratios of carnivores, omnivores and mixed C<sub>3</sub>-C<sub>4</sub> herbivores are significantly lower than those of C<sub>3</sub> browsers and C<sub>4</sub> grazers. Unlike the South African findings, C<sub>3</sub> browser and C<sub>4</sub> grazer Sr/Ca ratios do not differ from one another. Ba/Ca ratios are highest in C<sub>4</sub> grazers followed by C<sub>3</sub> browsers, mixed C<sub>3</sub>-C<sub>4</sub> herbivores, omnivores, and finally carnivores. Insectivory and consumption of underground storage organs amongst omnivores may be determined with trace elements. Since these patterns differ from South African ecosystems (Sponheimer et al. 2005), a comparable study should be conducted with eastern African fossil faunal assemblages before hominin trace elements are interpreted.

This encompasses the earliest evidence for systematic hominin predation upon large-bodied mammals (~2 Ma ago) (14) and megaherbivores (~1.95 Ma ago) (15), as well as the appearance of *Homo erectus* (~1.9 Ma ago), the first hominin species whose paleobiology is similar to later representatives of our genus and that consumed. (C) Estimates of water deficit (aridity) for eastern African fossil sites based on  $\delta^{18}O$  of herbivore tooth enamel. Error bars represent SE of the mean water deficit estimates. Like extant chimpanzees, these hominin taxa may have preyed upon vertebrate species smaller than themselves, but they almost certainly did not hunt megaherbivore prey (21). , Diets of mammalian fossil fauna from Kanapoi, northwestern Kenya. *J. Hum. Evol.* Part of a series on. Paleontology. Paleontology PortalCategory. v. t. e. A trace fossil, also ichnofossil ( /ÉÉknoÉšÉsÉl/; from Greek: ἀΐκνη, ikhnos "trace, track"), is a fossil record of biological activity but not the preserved remains of the plant or animal itself. Trace fossils contrast with body fossils, which are the fossilized remains of parts of organisms' bodies, usually altered by later chemical activity or mineralization. Ichnology is the study of such trace fossils and is the work of... New dietary strategies have been created to treat overweight and obesity and have become popular and widely adopted. Nonetheless, they are mainly based on personal impressions and reports published in books and magazines, rather than on scientific evidence. Animal models and human clinical trials have been employed to study changes in body composition and metabolic outcomes to determine the most effective diet. In the long term, current evidence indicates that different diets promoted similar weight loss and adherence to diets will predict their success. Finally, it is fundamental to adopt a diet that creates a negative energy balance and focuses on good food quality to promote health. Keywords: Fasting; Macronutrient; Obesity; Popular diets; Weight-loss.