

WHY DO WE EAT LESS THAN THE OTHER PRIMATES ?

K F Mathers and M Henneberg

Department of Anatomy and Human Biology, University of the Witwatersrand Medical School, Parktown 2193, South Africa

Received 2 July 1992

The aim of this study is to use a quantitative approach to energy flow through a biosystem in order to ascertain the importance of meat eating in hominid evolution.

The quantity of food that an animal must consume depends on energetic needs and efficiency of digestion and absorption (D&A). Estimates of food requirements for various animals were obtained from interviews with game rangers and zoo-keepers and literature. These are, in kJ/day/kg for adults, approximately: 70 for a 60 kg leopard, 140 for a 60 kg human, 230 for a chimpanzee, 260 for a baboon and 460 for a 60 kg ungulate. Carnivore D&A is more efficient than that of herbivores.

Estimates of food requirements for australopithecines are based on human standards of caloric needs (thus closer to a plausible minimum) with an assumption of a full demographic age structure based on newborn life expectancy of 21 years (modern human biological age). Our estimates are adjusted for individuals corresponding to adult body weight of 30 or of 60 kg. The estimated total energy need for a group of 10 hominids is 50 or 100 MJ per day. Such requirements could be met by gathering 140-280 kg of tubers or fruit or 15-50 kg of beans and nuts, weekly. Quantities of other plant foods fall between these extremes. These are unlikely to be available on a year-round basis in woodland savanna exploited in competition with baboons. It however takes only 1-2 Blesbokke or 3-6 Duikers to feed a group of 10 hominids during a week. Meat eating and improved D&A may have been the most efficient response to quantitative nutritious pressures.

*

*

*

Evolutionary Theory 10: 144 (December, 1992)

This is an abstract, printed without review.