

Letter to the Editor

## The value of ethnographic studies for making inferences about the nature of the human Paleolithic diet: comments on Lieberman et al. (2023)

Dear Editor:

I commend Lieberman et al. [1] for undertaking a re-examination of tropical hunter-gatherer (HG) diets in order to study their macronutrient compositions and variation in detail. Their sample comprised 15 high-quality ethnographic reports on the diets of 11 recent tropical HG groups. One of their hypotheses, which they aimed to test in their study, was that “*the degree of variation among hunter-gatherer diets precludes any simple, accurate characterization of a ‘normal’ ancestral diet in terms of macronutrient composition.*” Their analysis indeed revealed a high variation between animal-to-plant-based food consumption and therefore macronutrient composition between the different HG diets. Lieberman et al. [1] concluded that—consistent with their initial hypothesis—this high degree of variation refutes the concept of a Paleolithic diet with circumscribed macronutrient ranges, particularly criticizing *The Paleo Diet* (<https://thepaleodiet.com/>), which was trade-marked by Dr. Loren Cordain and initially prescribed macronutrient ranges of 19%–35% protein, 22%–40% carbohydrates, and 28%–47% fat. Here, I would like to extend the discussion of Lieberman et al. [1] with some additional points concerning their criticism of *The Paleo Diet* and the relevance of their findings for human diets during the Paleolithic era.

First of all, the main characteristic of *The Paleo Diet* is not the prescription of a particular macronutrient range, but the idea of mimicking the typical diet of Paleolithic humans with modern foods. This logically entails the exclusion of certain foods that would not have been available to preagricultural humans, in particular industrially processed foods, grains, legumes, and dairy. In his scientific publications, Cordain [2,3] pointed out the putative health benefits that may result from eliminating these food groups. The exclusion of industrially processed foods, grains, and legumes (but not necessarily dairy products) is also the hallmark of a set of other diets, which are motivated by an evolutionary perspective on diet and health, including carnivore

diets and Paleolithic ketogenic diets, such as Voegtlin’s [4] “Stone Age Diet”.

Second, Lieberman et al. [1] appear skeptical about the health benefits of adopting a modern Paleolithic diet, classifying grains and legumes as healthy and implying meat as a not-so-healthy food: “*Natural selection only favors adaptations, including dietary preferences, that increase reproductive success. If there is a net benefit to reproductive success, selection may favor heritable behaviors that diminish long-term health, such as meat and honey consumption [...] Furthermore, not all aspects of modern diets and food processing technologies are unhealthy.*” Although I agree with their latter argument that not all aspects of modern diets are necessarily unhealthy, I disagree with the first argument about natural selection. The reason is that in a cooperative group, the long-term health of individual members places strong constraints on the integrity of the whole group, so that natural selection on the individual levels has to be aligned with selection at the group level [5]. In other words, it is unlikely that any social species would have evolved on a diet that would not promote long-term health because such a diet would be detrimental to the survival and health of the whole social group. Indeed, empirical data make it plausible that physically fit and healthy grandmothers (and grandfathers) were an important factor for the survival of Paleolithic HG communities [6]. Of course, humans differ from animals by the fact that natural evolution based on mutations, selection, and genetic drift has always interacted with cultural evolution of norms, values, beliefs, rituals, and forms of social organization [7]. In fact, the current epidemic of chronic noncommunicable diseases could be attributed to a mismatch between the fast cultural evolution of modern humans during the Anthropocene and natural evolution, which acts over much longer timescales. It appears, however, that during the Paleolithic era, big-game hunting and meat eating were significant drivers of both natural and cultural evolution [8]. Ethnographic data may underestimate the contribution of meat to the Paleolithic human diet and thus overestimate dietary macronutrient variability because most large terrestrial animals became extinct between the Lower and Upper Paleolithic eras [9]. There are many examples of human physiology that provide evidence for an adaptation to high-meat diets and hunting; these include a very acidic stomach pH similar to that of scavengers, a longer small intestine and shorter large intestine than that of great apes (and more typical for carnivores), adipocyte morphology similar to carnivores, anatomic adaptations for endurance hunting and spear throwing, and a low

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physiologic insulin sensitivity [9]. It is also interesting that in the analysis of Lieberman et al. [1], the animal-to-plant food consumption ratio increased when only the most precise data were analyzed [1]. Hence, there is no reason to assume that even a high-meat consumption within the context of a diet devoid of grains, legumes, and dairy is detrimental to long-term health – such beliefs are not based on scientific evidence, but on often unconscious presuppositions, which are typical for what I have called the “gluco-centric” paradigm of modern societies [10].

This brings me to my third comment, which considers the epistemological implications of social presuppositions. Although researchers can try to consciously and explicitly reflect the social presuppositions of their actions in order to attenuate unconscious (subjective) influences on the object of inquiry, they can never fully get rid of their phylogenetically and ontogenetically aggregated experiences [7]. Thus, we have to accept an epistemological relativism also concerning our understanding of the nature of Paleolithic diets – it will always be limited, partial, fallible, and socially dependent. At the same time, this does not imply that we cannot form hypotheses about Paleolithic nutrition and rationally decide which one of these is favored by the data. To this aim, however, we should focus on interdisciplinary research and utilize evidence from a multitude of scientific fields; the analysis of Ben-Dor et al. [9] is an example of this approach. We should remember that ethnographic studies of HG diets are only a small piece of the puzzle, what constitutes an evolutionary justified frame for a species-specific or proper human diet to optimize health.

### Conflict of interest statement

The author reports no conflicts of interest.

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