Evaluating the dietary micro-remain record in dental calculus and its application in deciphering hominin diets in Palaeolithic Eurasia

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Stellingen behorende bij het proefschrift "Evaluating the dietary microremain record in dental calculus and its application in deciphering hominin diets in Palaeolithic Eurasia", te verdedigen door Robert C. Power, 1 Nov 2016, Universiteit Leiden.

Propositions relating to the thesis

1. Dietary particles trapped in dental calculus are intelligible dietary data. Although samples with low numbers of individuals may produce misleading results, analysis of the Taï Chimpanzee dental calculus shows that microremain assemblages reflect the long-term structure of diet composition. With careful study design, it is possible to make interpretations on the dietary behaviour of groups.

2 The assemblage of plant dietary microremains preserved within ancient and modern samples of hominin dental calculus does not document the real proportion of diet composed of vegetal foods. Yet, microremains probably record some data on the proportion of plant foods. The accuracy of dental calculus record varies according to individual.

3. Interpretation of dental calculus results must use additional data about the diets of studied groups; to do otherwise likely produces misleading results. Even in our reference population (the Taï Chimpanzees) most plant foods were not visible because they did not produce microremains or because microremains were redundant or were simply not preserved. A dental calculus approach is most useful for archaeological populations when combined with dental wear, isotopic, zoological, macrobotanical and lipid analysis.

4. When the results of dental calculus analysis are interpreted in this framework it is clear that although meat consumption was crucial for Neanderthal ecology, plants also formed a feature of diet across their range. Undoubtedly, their ability to exploit vegetal nutrition influenced the trajectory of their population history. Although it is tempting to

compare Neanderthals to recent foragers dwelling above the Arctic Circle, the environments Neanderthals occupied have no ecological analogues today.

Propositions relating to the field

5. Neanderthal range varied enormously. Northern and eastern regions in particular saw discontinuous occupation during colder periods. The local extinctions of Neanderthals during glacial phases does not imply that Neanderthal subsistence was unable to respond to changing conditions, their diet was inflexible or that they lacked advanced dietary ecological knowledge. The lack of certain technology (the lack of food storage, heat retention, tailed clothing etc.) may have been more restricting than foraging.

6. It is likely that consumption of plants has always been more frequent in low latitudes. In some cases, the diversity of the spectrum of consumed plants by hominins may have been relatively homogenous across this variation. This possible pattern could perhaps be due to a reliance on a number of core staples.

7. The breath and diversity of consumed plant taxa is a crucial human biocultural adaption but has been neglected in the study of many human societies. Researchers need to revaluate if recent high latitude foragers plant intake (deliberate and undeliberate??) data is accurate and if it could be refined using the ethnographic record.

8. Reconstructing plant use of extinct hominins and societies is useful not only for charting early food provisioning but also for shedding light on the repertoire of complex dietary ecological knowledge. Research can suggest awareness of seasonally availability of nutritious plant organs and the timely plant processing required to unlock extract nutrients.

Additional propositions

9. Food plants have always been an important part of the hominin nutrition. This topic has enjoyed increasing interest with the rise of the 'palaeodiet', unfortunately most versions of this popular diet misconstrues volume of plant use and selected taxa.

10. The inclusion of wild foods into hominin diets is virtually universal in space and time, but this hominin behaviour is highly variable in different chronologies and societies. Although wild plant use is much diminished since the advent of agriculture and more recently, urbanisation, it still contributes to human nutrition in the modern period. Anthropology may teach us how wild foods may continue to be used in the future.