Max Planck Institute for Evolutionary Anthropology

PRESS RELEASE
07.07.2009

Fish on the Menu

The isotopic analysis of a bone from one of the earliest modern humans in Asia, the 40,000 year old skeleton from Tianyuan Cave in the Zhoukoudian region of China (near Beijing), by an international team of researchers from the Max Planck Institute for Evolutionary Anthropology in Leipzig, the Graduate University of Chinese Academy of Sciences and the Institute of Vertebrate Paleontology and Paleoanthropology in Beijing, the University of British Columbia in Vancouver and Washington University in Saint Louis has shown that this individual was a regular fish consumer (PNAS, 07.07.2009).

Mandible of the 40 000 year old human skeleton from Tianyuan Cave near Beijing: Analyses of collagen extracted from this bone prove this individual to be a regular fish consumer (Copyright: Hong Shang, Chinese Academy of Sciences, Beijing)

Freshwater fish are a major part of the diet of many peoples around the world, but it has been unclear when fish became a significant part of the year-round diet for early humans. Chemical analysis of the protein collagen, using ratios of the isotopes of nitrogen and sulfur in particular, can show whether such fish consumption was an occasional treat or a regular food item.

The isotopic analysis of the diet of one of the earliest modern humans in Asia, the 40,000 year old skeleton from Tianyuan Cave near Beijing, has shown that at least this individual was a regular fish consumer. Michael Richards of the Max Planck Institute for Evolutionary Anthropology explains “Carbon and nitrogen

isotope analysis of the human and associated faunal remains indicate a diet high in animal protein, and the high nitrogen isotope values suggest the consumption of freshwater fish." To confirm this inference the researchers measured the sulfur isotope values of terrestrial and freshwater animals around the Zhoukoudian area and of the Tianyuan human.

Since fish has appeared on the menu of modern humans before there is consistent evidence for effective fishing gear, fishing at this level must have involved considerable effort. This shift to more fish in the diet likely reflects greater pressure from an expanding population at the time of modern human emergence across Eurasia. "This analysis provides the first direct evidence for the consumption of aquatic resources by early modern humans in China and has implications for early modern human subsistence and demography", says Richards.

Original work:

Yaowu Hu, Hong Shang, Haowen Tong, Olaf Nehlich, Wu Liu, Chaohong Zhao, Jincheng Yu, Changsui Wang, Erik Trinkaus, Michael P. Richards
Stable Isotope Dietary Analysis of the Tianyuan 1 Early Modern Human
PNAS. July 7, 2009. Vol. 106, No. 27

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