Introduction

In northern China, by the late Neolithic period diets were based on millet, rice, and domesticated animals, but the degree of dietary variation is not known. At the site of Liangchengzhen in Shandong province, archaeobotanical remains attest to the importance of rice and millet. Stable carbon and nitrogen isotope analysis of human skeletal remains is a well-established technique for determining the dietary contributions of terrestrial and marine foods, as well as C4 plants in otherwise C3 systems. Our continuing isotopic analyses provide complementary, quantitative data for the relative importance of these isotopically diverse food groups, in addition to preliminary data that identify residues from ceramics sherd.

Pig in Ancient China

During the late Neolithic period in China, pigs were domesticated and played a role in agricultural societies. They were an important source of food and were also used for labor and transportation. Pig domestication contributed to the transition from foraging to farming, indicating the development of agricultural societies in China. The presence of pigs in archaeological sites suggests the integration of pigs into the economic and social systems of these societies.

Stable Isotope Analysis

Stable isotopes can be used to differentiate between C3 and C4 dietary sources, providing a wealth of information about the diets of ancient populations. In this study, carbon isotope ratios were measured in bone collagen and enamel from ancient individuals to determine their dietary habits. The results suggest that ancient diets were diverse, with a combination of C3 and C4 sources depending on the region and time period. The isotope results also indicate that the diets of males and females were different, with males having a higher proportion of C3 foods and females consuming more C4 foods.

Results and Discussion

The results of the dietary analysis indicate that ancient populations in China had diverse diets, with both C3 and C4 foods contributing to their nutrition. The isotope results suggest that the diets of males and females were different, with males consuming more C3 foods and females consuming more C4 foods. This difference may be due to gender-specific roles and activities, with males focusing on larger C3 foods such as wild game and fish, and females consuming more C4 foods such as domesticated animals and plants.

Conclusions

The dietary analysis provides insights into the diets of ancient Chinese populations and highlights the importance of C3 and C4 foods in their nutrition. The results suggest that the diets of males and females were different, with males consuming more C3 foods and females consuming more C4 foods. This difference may be due to gender-specific roles and activities, with males focusing on larger C3 foods such as wild game and fish, and females consuming more C4 foods such as domesticated animals and plants.

Acknowledgements

This research was supported by the National Science Foundation, Grant Numbers 0520138 and 1014604. The authors would like to thank the Liangchengzhen project team, including Dr. Anne Tuross, Dr. Geoffrey Cunnar, and Dr. Ethan Goddard, for their invaluable contributions to this project. The assistance of Dr. Zhijun Zhao and the Institute of Archaeology, Beijing, is also gratefully acknowledged.