Determination of nutrition habits of Neolithic habitants using stable isotope approach

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In the present study the nutrition habits of Neolithic farmers in continental part of Slovenia were determined using stable isotopes of carbon and nitrogen. The human bone samples from the burials deposited in Ajdovska cave and related grave goods dishes, composed of wheat grains and plants, domesticated and hunted animals as well, were analysed.

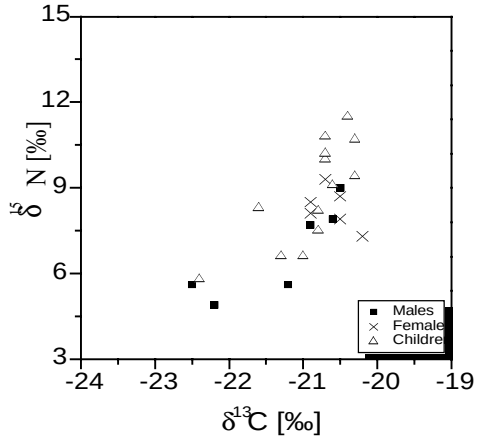

Figure 1. Scatter diagram of $\delta^{13}C$ and $\delta^{15}N$ values in human samples from Ajdovska cave (Ogrinc, 1999).

Conclusions

The stable isotope evidence suggests stable paleoeconomy based on terrestrial food sources on one hand and clear individual preferences in diet on the other. This diet was based mostly on herbivores, domestic and wild animals and relatively less on vegetable. The significant higher $\delta^{15}N$ values found in infants and young children indicate the "weaning effects". The pattern of dietary habits has been rapidly changed in the older children samples.

Reference

Ogrinc N., (1999) Doc. Praehistor. 26, 193-200.

Formational processes of sedimentary micro-structure in meromictic Lake Kaiike sediments, Japan

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In order to reveal processes of sediment formation in past anoxic marine environments, such as the Ocean Anoxic Environment during the Cretaceous, it is important to understand present anoxic oceans. Lake Kaiike, located on the seaward-side of Kamikoshiki Island, southwest Japan, may be considered as a modern analogue.

The lake water develops an intense density stratification between fresh water and seawater which diffuses through the neighboring gravel bar and lake bottom. At a depth of around 4.5 m, there is a permanent O_2/H_2S boundary, where an underwater camera has indicated purple-colored high turbidity. Below this boundary, filamentous abundant sinking particles are observed. Microscopic observations of the sinking particles indicate that the filaments consist of aggregations of purple sulfur photosynthetic bacteria.

Lake sediments have been recovered using an undisturbed core sampler. The top 7 cm of the core is comprised of accumulated, thin, bacterial mats. The boundary between the bacterial mat structure and underlying sediment is gradational. Bacterial cells observed within the sinking particles have not been observed in either the mats or sediments; however, purple-colored organic compounds are preserved. Fine-scale laminations (<1 mm in thickness) in the core, were observed using soft-X ray photography. This illustrated that the laminations consisted of alternations of higher and lower density structures. Smear slide observations indicate that some higher density laminations are dominated by a single species of diatom frustules or resting spores.

These observations suggest that bacteria-originated particles are continuously accumulated and bloomed diatoms are sporadically supplied to the lake-bottom. Eventually, these processes will form a distinct sedimentary structure of fine laminations. In order to further understand physical, chemical, and (micro) biological processes for sediment formation occurring at the sediment-water interface of Lake Kaiike, we are conducting further, multidisciplinary research.