Abstract

This diploma thesis deals with the influence of biological, socioeconomic, environmental and also physiological and pathophysiological factors on isotopic ratios of $\delta^{13}C$ and $\delta^{15}N$ bone collagen of individuals with complete osteobiographic documentation. So far, isotope analysis has been used to reconstruct the diet of past populations, without considering the effect of non-nutritive factors. The aim of this work is to describe the effect of these factors on isotopic values of carbon and nitrogen in bone tissue of individuals.

The material was processed by the stable isotope analysis. The bone collagen of ribs and femurs of 45 individuals (27 males and 18 females) who were members of several related families and occupied the territory of the Czech Republic during 19th-21st century was analysed. The age range of the subjects was 20-90 years. For correct interpretation of the results, a reference set consisting of eight samples of different animal species was analysed.

Significant isotope differences between families with different social status have been demonstrated in this thesis. Individuals with higher status showed higher $\delta^{15}N$ values. The year of death of the individual was also reflected in isotopic values, and later living individuals showed slightly reduced $\delta^{15}N$, which may be due to environmental change. The age, health, or pregnancy in females did not have a demonstrable effect on isotopic values in bone collagen of subjects. The difference between chronic disease and sudden death did not affect the isotopic ratios of carbon or nitrogen. The results of the diploma thesis showed that the isotopic ratios of carbon and nitrogen reflect the environmental and socioeconomic impacts and the diet of the individual, rather than the health status of the organism.

Key words: stable isotope analysis, an osteobiographic profile, bone collagen, collagen turnover, pathophysiological factors