Abstract of the thesis "Paleoanthropological approach to oxygen isotopic fractionation-model research"

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The stable oxygen isotopic ratio in mineral fraction of bone tissue is determined by the isotope composition of drinking water (adults, older offspring) or breast milk (youngest children). Both in the process of thermal treatment of water or liquid foods and during milk production there is an isotopic fractionation, resulting in a change in the oxygen isotopic composition of consumed water. Consequently, it can be assumed that bone tissue of individuals drinking boiled water or milk will not reflect the environmental levels of oxygen isotopes what can affect the interpretation of many results obtained as a result of isotopic analysis.

The main aim of the present thesis was to determine the influence of thermal processing of drinking water and breastfeeding on final isotopic composition of oxygen in bone apatities taking into account isotopic fractionation using rats as an animal-based model.

The experiment was carried out for 59 rats Wistar divided into two groups according to the type of consumed water (tap water, boiled water). Among the research groups there were mothers, breastfed and weaned individuals.

On the grounds of the analysis of stable oxygen isotopes in rats bone tissue, the degree to which a consumption of a thermally processed water can affect the proportion of oxygen isotopes in human bone tissue was estimated. It has also been shown that changes in trophic levels during breastfeeding and weaning are likely to be observed in studies of stable isotopes of oxygen. On the basis of the animal model, the possible disproportion between the oxygen isotopic ratios between human mother and child was estimated.

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