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Determination of radiocarbon activity in mixed diet via indirect measurements

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This contribution describes an alternative mean how to perform monitoring of ^{14}C activity in mix diet via indirect measurements, i.e. via analyses of other sample kinds with carbon isotopic composition linked to the radiocarbon composition of the individual diet.

This research was launched due the European Commission Recommendation 2000/473/Euratom, requesting monitoring of ^{14}C activity in a sparse network in a mixed diet. This kind of monitoring is not being performed yet in the Czech Republic. Aim of the research was to find a simple and effective procedure, how to perform determination ^{14}C activity in the mixed diet.

Monitoring of ^{14}C activity in mixed diets by sampling and analysing the mixed diet itself appears impractical due to inhomogeneity if such kind of samples. There are different types of samples, various kinds of human skin derivatives, that reliably represent the carbon isotope composition of the human mixed diet. Such samples, allowing uncomplicated sampling, are naturally robust against inhomogeneity and easy to analyse.

Human hair were chosen as an ideal type of sample for this purpose. A preliminary monitoring of ^{14}C activity in mixed diet was performed simultaneously by both direct and indirect measurements.

Our contribution will contain summarization of yielded results, evaluation of the relation between the composition of mixed diet and human hair, and proposals, how to exploit reached knowledge for practical ^{14}C in mixed diet monitoring.

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