The retention of $^{85}$Sr in snails "Helix Pomatia" was studied. It was found that in the first period (approximately up to 20 d) after the removal of snails from the contaminated diet the $^{85}$Sr, incorporated in the snails, was lost at a rate of about 0.12 per day, e.g., with an effective half-life of 5.8 d. Thereafter, in the second period the $^{85}$Sr decreases more slowly — with the effective half-life of 203 d.

INTRODUCTION

Snails in building up their shells with calcium carbonate can accumulate chemically similar cations such as Sr$^{2+}$. Because snails eat mostly green leaves of plants, which used to have a low calcium content, a high uptake of radiostrontium by ingestion might be expected, if present in the fallout. The radioactive contamination of the environment following the Chernobyl accident has increased the interest in such "biological detectors". The uptake and loss of cations may depend on the mechanisms with which they bind and metabolize calcium.
It is believed that the organs of snails regulate their concentration by variable excretion rates.

The scope of this investigation was to measure the decrease of $^{85}\text{Sr}$ amount in snails "Helix Pomatia", as the nuclide $^{85}\text{Sr}$ is useful for various investigations of strontium metabolism owing to its easy detectable gamma-radioactivity (0.514 MeV). The radioactivity of the snails decreases because of both physical half-life of $^{85}\text{Sr}$ ($T = 64$ d) and the physiological elimination characterized by the biological half-life $T_B$. The global decrease is called "effective half-life $T_{ef}$", given by the following equation:

$$\frac{1}{T_{ef}} = \frac{1}{T} + \frac{1}{T_B}$$

EXPERIMENTAL

Animals

Snails of the species "Helix Pomatia" were collected in the afforested area approximately 10 km east of Brno, Czechoslovakia. The experiment started with 20 individuals and finished 48 d after removal of snails from the strontium-contaminated diet. The snails were kept in two special boxes of man-made material.

Diet contaminated with $^{85}\text{Sr}$

The green leaves of salad were dried in a desiccator for 10 min and then immersed into the solution of $^{85}\text{Sr} + \text{SrCl}_2$ as a carrier. The specific activity of the solution was 1 MBq.l$^{-1}$ and its pH was set neutral by ammonia. It was observed that 1 g of green mass was able to absorb cca. 0.25 ml of solution in this way.