AGE-DEPENDENT ^{75}SE-SELENMETHIONINE DISTRIBUTIO N IN RABBIT ORGANS

K. Demireva

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There exist different concepts concerning the influence of age on protein metabolism in human and animal organism. According to V. R. Joung et al. (7) in mammalia the protein requirements are determined by the age. J. C. Waterlow and J. L. M. Stephen (5) found out that protein metabolism in rats decreases after increase of age and body weight. The changes in liver and muscles are the most severe ones. Using 4, 7, and 12-weeks aged rats K. Nakano and H. Sidransky (3) established that ^{14}C-leucine incorporation into skeleton musculature proteins diminished depending on age. Based on these data and on our own observations we decided to ascertain the changes of the distribution of the essential amino acid methionine in rabbit organs when investigated at the age of 4 and 6 months.

Material and methods

The experiments were carried out on 22 male rabbits of Chinchil breed. The animals were given common laboratory food at vivarium conditions of breeding. Some animals were studied at the age of 4 months and the rest ones — at that of 6 months. Two hours before killing they were injected i. v. with 5 C/kg b. w. ^{75}Se-selenmethionine in the auricular vein. After decapitation of the animals their internal organs were taken off and carefully washed up with saline solution, and then dried up. The weight of any organs was measured. The labelled ^{75}Se-selenmethionine distribution was estimated as well as in whole organs as in selected parts of some ones beforehand broken to pieces in saline solution. The activity determined for g tissue was calculated as a percentage of the total injected one. The results obtained were processed after the method of variational analysis.

Results and discussion

Our results showed that methionine distribution in single organs of rabbits aged 4 and 6 months was not constant. Pancreas showed the strongest activity while liver, intestine, kidney, adrenals, spleen and lung had a middle one. Thymus, heart and aorta possessed a weaker activity while musculature had the weakest one (see table 1). Methionine accumulation was smaller in several organs of the animals aged 6 months as compared with that of the younger ones. Most significant changes were established in the thymus — a twofold decrease of the activity. The values were significantly lower in liver ($p<0,001$) and intestine ($p<0,05$). There was a smaller accumulation in pancreas, adrenals, lung, heart, and muscles where the differences were not statistically significant excepting lung

and aorta. The values were equivalent in both animals' groups concerning spleen and kidneys only. (see table 1).

These results are analysed to be analogous to other data (1, 2, 4) according to which there exists an age-dependent decrease of protein synthesis in rat and

Table 1

^{75}Se-selenmethionine distribution in rabbit organs depending on age

Organs \ Age	Number n-4 months m-6 months	4 months $\bar{x}$ Sx	6 months $\bar{x}$ Sx	P
Heart	n-10	0,055—0,004	m-12	0,045—0,002	0,05
Aorta	„	0,047—0,003	„	0,037—0,002	0,05
Liver	„	0,291—0,019	„	0,204—0,007	0,001
Lung	„	0,100—0,004	„	0,083—0,004	0,05
Spleen	„	0,113—0,013	„	0,117—0,005	0,05
Kidney	„	0,262—0,025	„	0,261—0,02	0,05
Intestine	„	0,245—0,036	„	0,193—0,012	0,05
Muscle	„	0,025—0,001	„	0,020—0,0007	0,05
Pancreas	„	0,729—0,070	„	0,711—0,029	0,005
Thymus	„	0,088—0,009	„	0,042—0,001	0,001
Adrenals	„	0,142—0,010	„	0,125—0,005	0,05

mice liver lysosomes. They are in concordance with the results of other authors (3) who have established a significantly smaller C^{14}-leucine assimilation in rat skeletal muscle proteins when older animals have been concerned. According to these authors (3) the changes of protein metabolism are age-dependent and accompanied by a progressive diminution of RNA and polyribosomes concentrations. Our findings concerning this significant decrease of ^{75}Se-methionine accumulation in the organs with most intensive protein and ribonucleic metabolism both thymus and liver in older rabbits confirm the literature data available.

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РАСПРЕДЕЛЕНИЕ МЕТИОНИНА — ^{75}Se В ОРГАНАХ КРОЛИКОВ В ЗАВИСИМОСТИ ОТ ИХ ВОЗРАСТА

К. Демирева

РЕЗЮМЕ

Исследовано распределение метионина-^{75}Se в органах четырех- и шестимесячных кроликов. Установлено, что в органах более взрослых животных накопление метионина значительно меньше. Достоверно были получены более ниские стоимости накопления метионина в зобной железе, печени, аорте, легких.