

# MATERIALS ON THE DISTRIBUTION OF SELENIUM IN HUMAN ORGANS AND TISSUES

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Until recently, selenium was of interest to biologists only in the toxicological aspect. Thus, a number of authors [1, 4] note that in certain geographical regions (the Hawaiian Islands, Western and Central states of the United States, Canada, and Colombia), the high selenium content in soils (more than 0.001%), natural waters, and plants leads to pathology—a unique disease, which has received the name alkali disease.

A. N. Kosobryukov[3] indicates that localities with a high selenium content have also been discovered in the Soviet Union.

According to the data of the above-mentioned authors, when there is a substantial migration of selenium in the biogeochemical chain of soil-water-plants-animals, a number of pathological changes arise in the animal organism (lag in growth and development, softening of the bone tissue and horny formations).

Certain researchers [5] have established in experiments on rabbits that prolonged feeding with a dystrophogenic feed with an addition of sodium selenite (10 mg per g of diet) produces the growth of a blastomatous tumor within 28-32 months in 30% of the cases.

However, it was shown as early as 1941 [4] that feeding chicks with selenium (in the form of selenium containing wheat) at a concentration of 2 mg/ kg produces a small improvement of their growth. The favorable effect of small amounts of selenium in exudative diabetes in chicks was later established [6]. Tellurium and arsenic proved ineffective in this case.

Selenium Content in Human Organs and Tissues (in mg per 100 g of fresh substance)

Organ and tissue	1. Child seven months, extreme prematurity	2. Child nine months, intrauterine asphyxia	3. Child nine months, intrauterine asphyxia	4. Child six months, extreme prematurity	5. Girl 15 years, food poisoning	6. Man 29 years, skull fracture (trauma)	7. Man 64 years, mechanical asphyxia	8. Man 75 years, general atherosclerosis
Heart	0.0083	0.0040	0.0006	0.0204	0.0004	0.0072	0.0114	0.0024
Lungs	0.0020	0.0016	0.0006	0.0011	0.0024	0.0138	0.0100	0.0024
Spleen	0.0140	0.0071	0.0079	0.0046	0.0018	0.0076	0.0078	0.0014
Liver	0.0072	0.0026	0.0011	0.0019	0.0079	0.0058	0.0161	0.0072
Kidneys	0.0037	0.0028	0.0031	0.0014	0.0080	0.0271	0.0161	0.0016
Pancreas	0.0260	0.0240	0.0261	0.0260	0.0032	0.0026	0.0100	0.0021
Muscles	0.0021	0.0021	0.0024	0.0016	0.0014	0.0028	0.0226	0.0020
Skin	0.0036	0.0021	0.0025	0.0028	0.0012	0.0028	0.0124	0.0032
Bone	0.0105	0.0090	0.0064	0.0984	0.0021	0.0031	0.0243	—

At the present time, many researchers indicate an effect of the use of selenium compounds as prophylactic and therapeutic agents in white muscle disease of farm animals. Thus, the use of therapeutic and prophylactic doses of sodium selenite in animal husbandry has reduced the death rate from white muscle disease in a number of areas of the Chita region by more than 20-fold [2].

The positive effect of small amounts of selenium on the animal organism poses the question of its biological role, and, consequently, of its distribution in the animal and human organism.

We undertook to investigate the selenium content in human organs and tissues according to the method of Ivankova and Blyum in our modification.

#### PROCEDURE AND RESULTS

The organs and tissues of the corpses of eight newborn and adult persons, who died of various causes, served as the material for the investigation (the material was supplied by the anatomical pathologist of Chernovsk Regional Hospital, N. I. Zabrodin).

Our investigations (the results are presented in the table) show that selenium is contained in all the human organs and tissues studied. The distribution of selenium differs in newborn and adult humans. Evidently selenium is distributed more uniformly in the newborn organism. We should mention the substantial content of selenium in the pancreas of the newborn infant.

#### LITERATURE CITED

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6. E. L. Patterson, R. Milstrey, and E. L. R. Stokstad, Proc. Soc. exp. Biol. (New York, 1957), Vol. 95, p. 617.

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All abbreviations of periodicals in the above bibliography are letter-by-letter transliterations of the abbreviations as given in the original Russian journal. Some or all of this periodical literature may well be available in English translation. A complete list of the cover-to-cover English translations appears at the back of this issue.

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