

# THYROID FUNCTION AND BLOOD AND TISSUE LEVELS OF SH-GROUPS IN RABBITS WITH EXPERIMENTAL ATHEROSCLEROSIS

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Experimental atherosclerosis in rabbits is accompanied by depression of thyroid function and changes in the state of sulfhydryl groups in the tissues.

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The concentration of SH-groups in the blood and tissues and the thyroid function of rabbits with experimental atherosclerosis were investigated.

## EXPERIMENTAL METHOD

Experimental atherosclerosis was produced in 25 rabbits by daily administration of a suspension of cholesterol (0.3 g/kg body weight) in 4% starch solution for 90 days. Blood was investigated before feeding and 30, 60, and 90 days after the beginning of the experiment. The rabbits were killed by air embolism, and the brain, aorta, heart, lungs, liver, spleen, adrenals, kidneys, and striated muscles were removed. The control group contained 10 intact rabbits.

Thyroid function was determined from the protein-bound iodine concentration in the blood (PBI) [1], and the level of SH-groups by amperometric titration [2].

## EXPERIMENTAL RESULTS

The blood cholesterol level of the experimental rabbits was increased by 5.4 times, the content of total protein, globulins (mainly on account of the  $\beta$ - and  $\gamma$ -fractions) and  $\beta$ -lipoproteins was increased, while the content of albumins and  $\alpha$ -lipoproteins in the blood serum showed a relative decrease.

In the course of the experiment the level of free SH-groups of serum proteins fell to reach a minimum by the end of the experiment ( $22.2 \pm 1.2$   $\mu$ moles/g nitrogen, compared with  $50.2 \pm 2.2$   $\mu$ moles for intact rabbits). The level of SH-groups in whole blood on the 90th day showed a sharp decrease ( $293.3 \pm 17.7$   $\mu$ moles/100 ml blood, initially  $453.2 \pm 22.3$   $\mu$ moles). In the course of the experiment the content of SH-groups of the erythrocytes also fell. By the end of the experiment the level of bound SH-groups in the blood was reduced by 33% ( $102.8 \pm 2.0$   $\mu$ moles/g nitrogen, initially  $151.8 \pm 1.5$   $\mu$ moles). The decrease in the content of S-S-groups on the 90th day was 29%.

Hypercholesterolemia in the rabbits was accompanied by a regular decrease in the blood PBI concentration ( $2.43 \pm 0.13$   $\mu$ g%, normal  $3.94 \pm 0.17$   $\mu$ g%).

The content of SH-groups of soluble tissue proteins (except from the heart and muscles) was reduced. The most marked decrease was found in tissues of the adrenals (by more than 50%) and brain (20%).

The level of SH-groups of tissue compounds of low molecular weight was raised by the end of the experiment, the greatest increase being observed in tissues of the heart and kidneys (almost doubled). The increase in their concentration in the aorta, spleen, and muscles was very slight.

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#### LITERATURE CITED

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