

# The Results of the Expression of the Marker S-100 Immunogystochemical Morphological Changes in the Skin When Hyperthyroidism With L-Thyroxine Is Called in Rats Without White Blood under the Conditions of the Experiment

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**Abstract.** In this study, an experimental method called hyperthyroidism using the drug L-thyroxine from rats without white offspring. As well as immunogystochemical testing techniques from micropreparations made from skin tissue structures isolated from them, the S-100 marker was selected and data on results related to the expression level of the same marker is presented.

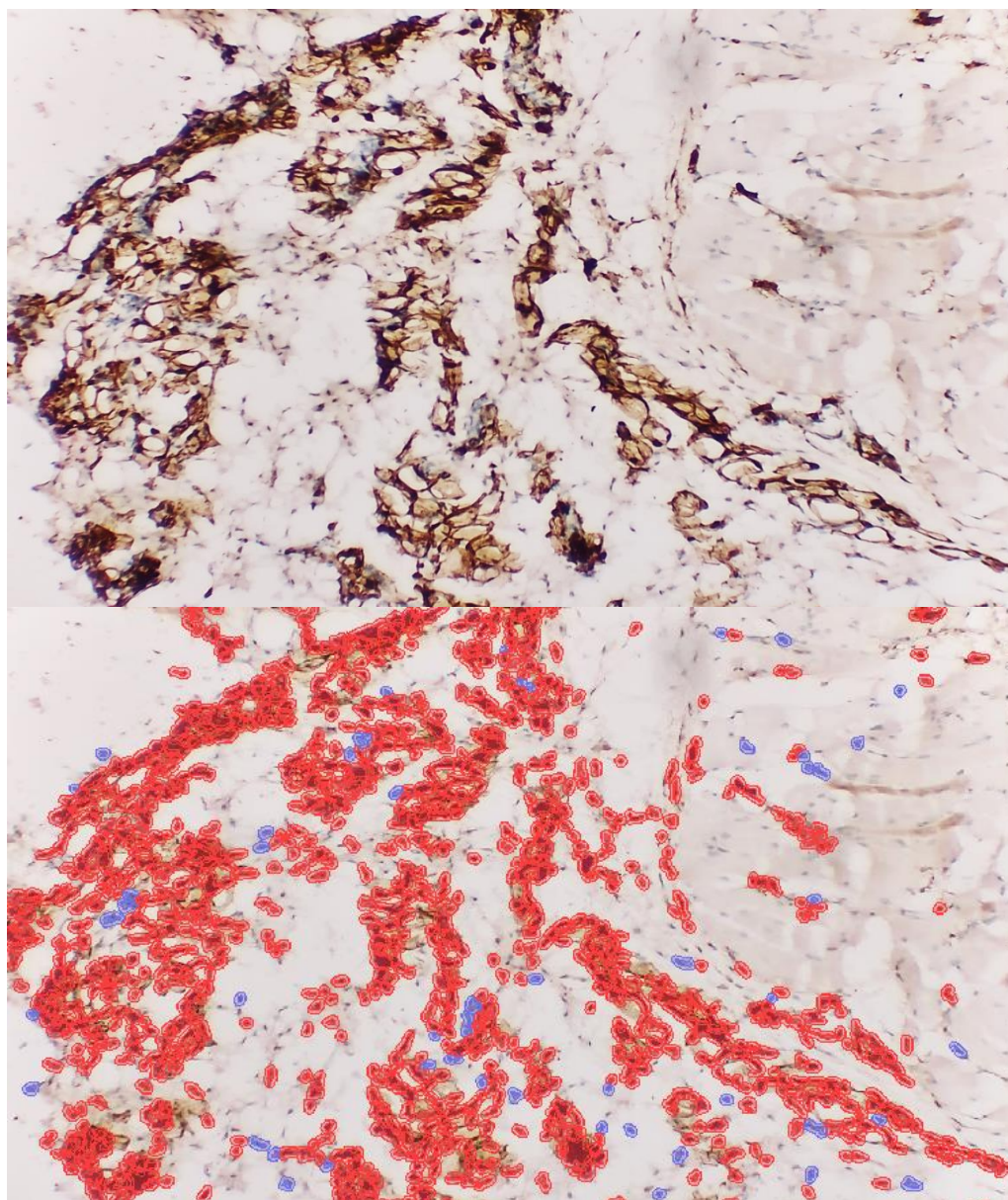
**Keywords:** L-thyroxine, hyperthyroidism, Immunogystochemistry, Marker S-100, skin tissue.

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**Research objective:** Determination of expression of Marker S-100 in the skin in experimental hyperthyroidism.

**Material and methods:** To carry out the study, 18 non-white rats of different sexes were isolated and hyperthyroidism was called in using the drug L-thyroxine. To study isolated skin samples immunogystochemically, 18 prepared histological preparations were initially carried out in a system that specialized and automated the expression level of antigens responsible for proliferation in their cells after deparaphinization, dehydration, demasking, i.e. Ventana Benchmark XT, Roche, Switzerland. The S-100 antigen was examined in samples ranging from 1 to 10 using an immunologically identifiable antibody. In this case, the expression level of this antigen in different areas of tissue structures was calculated using the computer-programmed method of QuPath 4.4.0 and evaluated in percentages.

**Main part:** S -100 protein is a protein detection used to control the diagnosis, prediction of consequences and treatment of oncological, neurological, inflammatory and other diseases. The S-100 protein is a calcium-bound protein, currently containing about 25 manifestations of the S-100 protein, which performs various functions in the body, that is, participates in cell growth and stratification (differentiation), transcription, protein phosphorylation, muscle fiber contraction and other processes. Together with this, it is also involved in the control of the cell cycle and apoptosis. In this context, this protein is also involved as an important informant in oncogenesis processes. The concentration of protein S-100 can also change in many malignant tumors, for this purpose it is used in assessing the diagnosis of diseases and their consequences, depending on the amount of protein. S-100B protein, on the other hand, is important in the diagnosis of melanoma. The S-100B protein is the standard immunogystochemical marker for the pathomorphological diagnosis of melanoma. Together with this, the release of this protein by melanocytes, which have become malignant tumors, increases. The S-100B protein is a well-studied marker of melanoma, different clinical stages of melanoma disease coincide with quantitative changes in this protein. Very high concentrations of this biomarker are considered high in diffuse tumors. This protein is considered high in nevus and melanomas (above 95%) and metastatic foci. This is used in predicting the outcome of melanoma based on the amount of protein, which means that when the amount is high it will be possible to think about the aggressive course of the disease. This protein content is also used to assess the effectiveness of the treatment of melanoma. Depending on the decrease in protein content, a conclusion is made about the regression of the disease. Melanocytic marker S100 is a protein. It has been detected in all of the cells of the central nervous system that develop from 3 different embryonic leaflets, and expression of this protein in a wide spectrum in normal and pathological tissues has been detected.

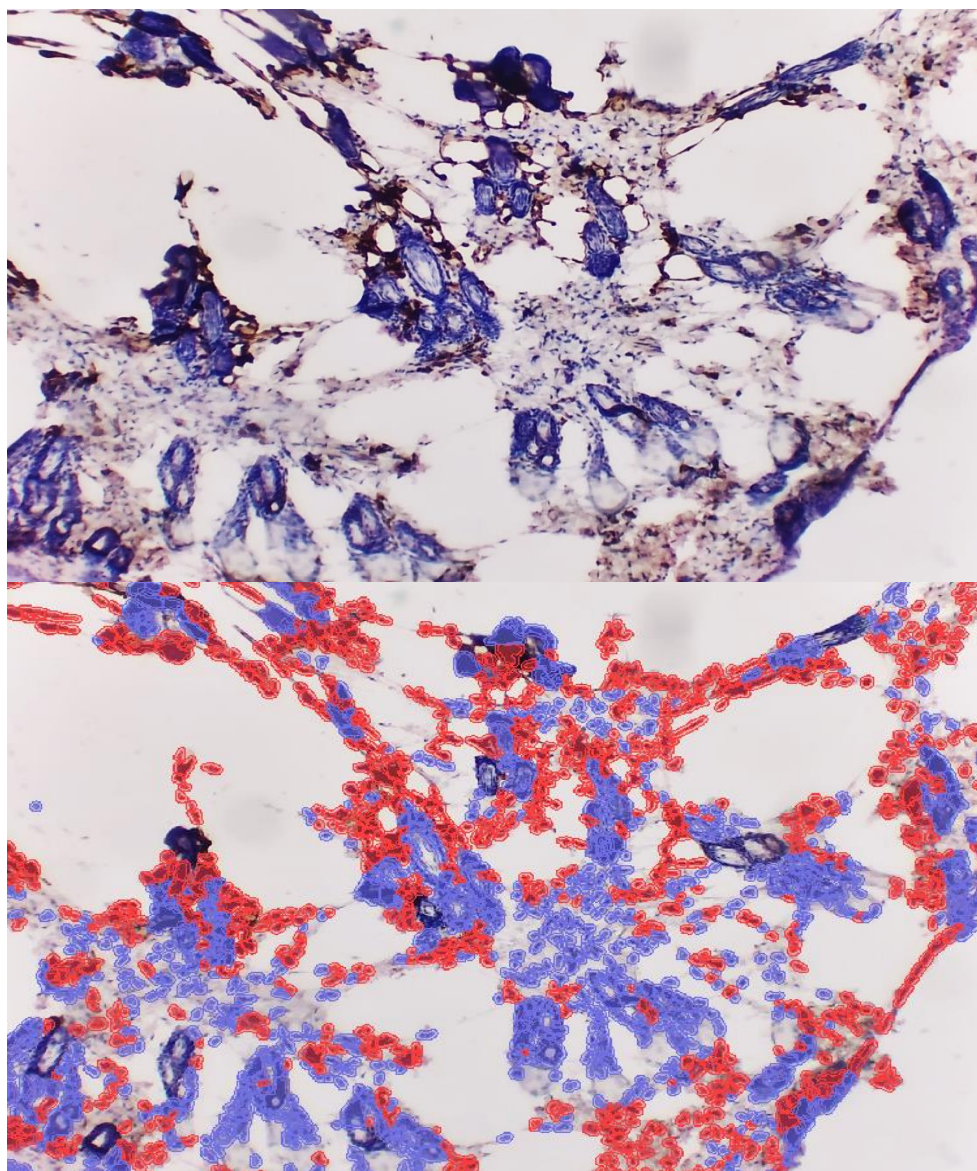


Total number of identified cells	1126
Positive cells	1072
Negative Cells	54
Positive Expression	95,2 %
Total area	993300 px <sup>2</sup>

Figure 1. Expression of the immunohistochemical marker S-100 in the skin in experimental hyperthyroidism.

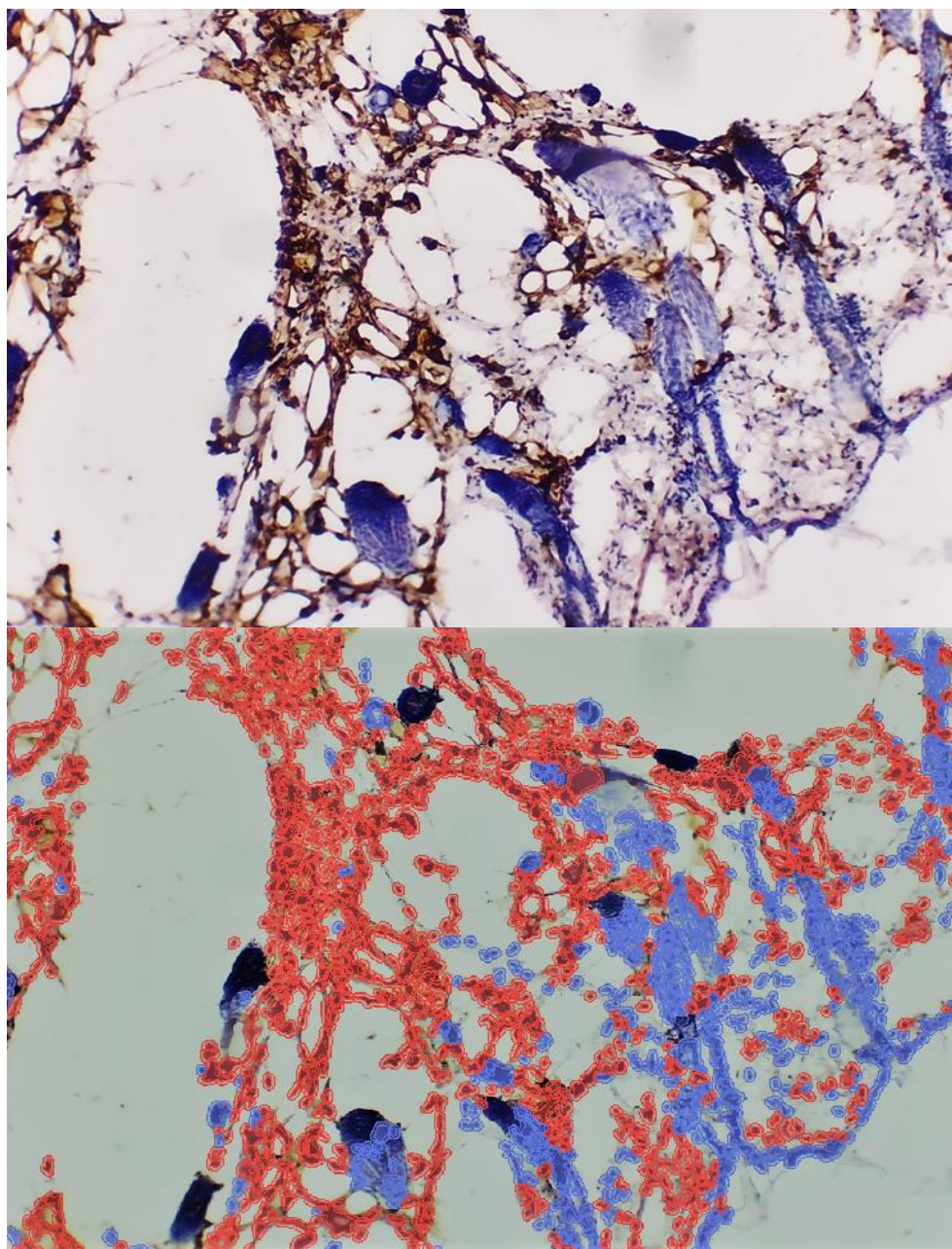
Positive expression has also been found in tumours and normal tumour tissue, which is used to differentiate tumour tissue tumors from other natured derivatives. In chondromas, the S100 protein is considered immunologically reactive, expressing cytokeratin and ema in contrast to Mountain tumors. This protein has been observed in myoepithelial cells and in tumors that develop in the mammary gland, adrenal gland and paraganglia and in the same tissues, in addition, this protein is detected in the nucleus and cytoplasm of Schwann cells, in the cells of the sympathetic and parasympathetic ganglia.





Total number of identified cells	1713
Positive cells	828
Negative Cells	885
Positive Expression	51,66%
Total area	1128290 px <sup>2</sup>

Figure 2. expression of immunogystochemical s-100 marker in the skin in experimentally called hyperthyroidism.



Total number of identified cells	1645
Positive cells	1137
Negative cells	508
Positive expression	69,12 %
Total area	1078820 px^2

Figure 3. expression of the marker immunogystochemical s-100 in the skin in experimentally called hyperteriosis.

The S-100B protein is also found in astrocytoma, kidney tumors, and leukoses of various manifestations, and metastatic lesions in the kidneys and liver. In addition, there is an increase in the amount in inflammatory and Infectious Diseases. Other types of S-100 protein S-100a4 are used to assess the consequences of malignant tumors of the mammary gland, stomach, bladder and lungs.



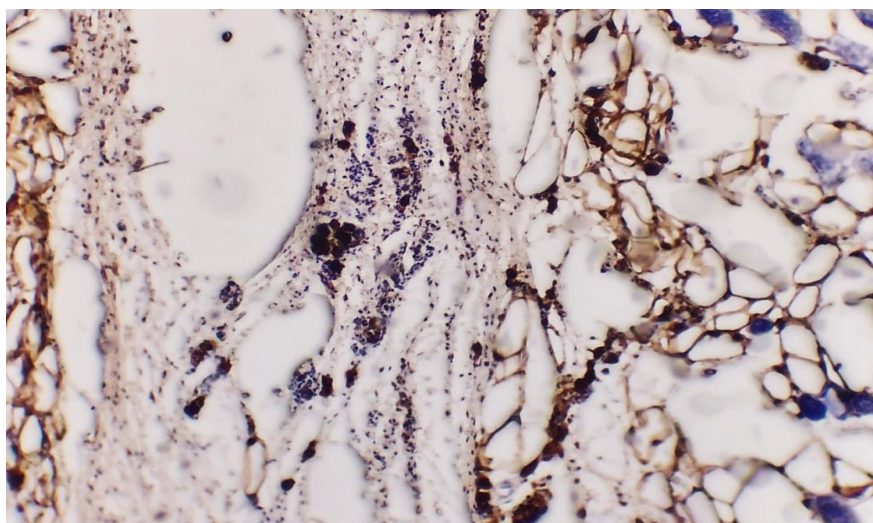


Figure 4. expression of immunogistochemical s-100 marker in the skin in experimentally called hyperthyroidism. Positive expression 89.5%

S-100a7 is a protein used as a biomarker of the lungs and ovaries. The S-100a9 protein is a safe prostate hyperplasia and is used in differential diagnosis of malignant tumors. S-100 protein is widely used in clinical practice not only for the diagnosis of malignant tumors, but also for the identification of other pathologies. The production of S-100V protein in the cranial brain is often done by astrocytes, an increase in protein levels that can be seen reporting from data on nerve tissue damage in the cranial hypoxia and hypoglycemia counts. The roughness of the protein S-100V in the blood and its increase in spinal fluid indicate damage to the spinal cord. it is synthesized and performs various functions. An increase in the amount of this protein indicates the activity of inflammatory processes, which is observed in diseases such as rheumatoid arthritis, chronic bronchitis, mucovissidosis, for example.

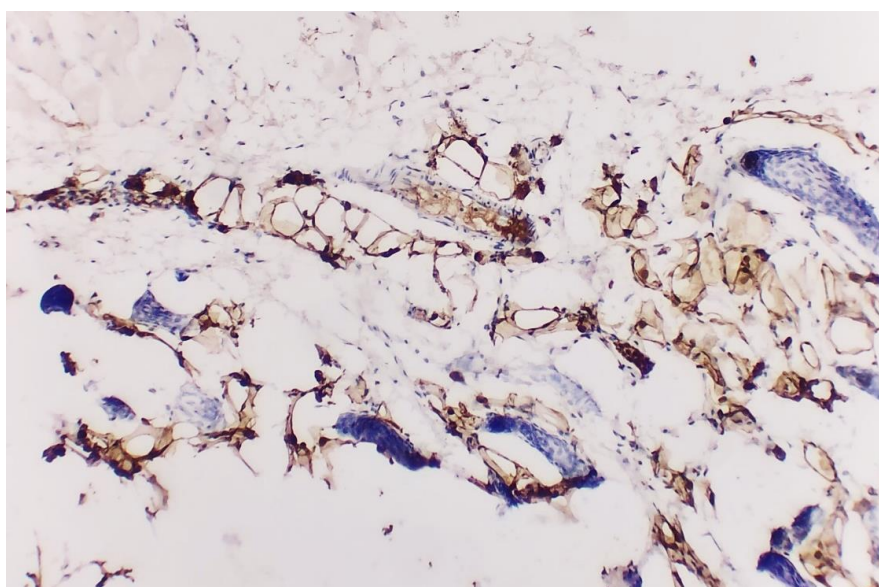


Figure 5. expression of immunogistochemical s-100 marker in the skin in experimentally called hyperthyroidism. Positive expression 62.5%

Hence the protein S-100 is a nonspecific biomarker and is used in the role of biomarker for diseases of different etiologies. It is recommended to re-check if the results obtained are suspicious. It is thus used to assess the diagnosis, consequences of diseases and control the effectiveness of treatment treatments for oncological, neurological, inflammatory and other diseases.



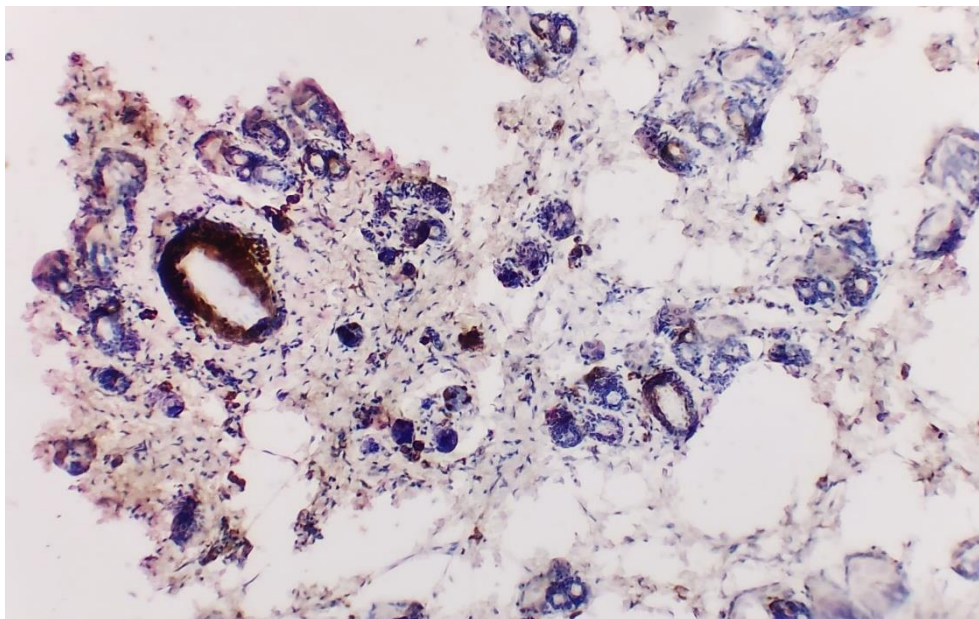
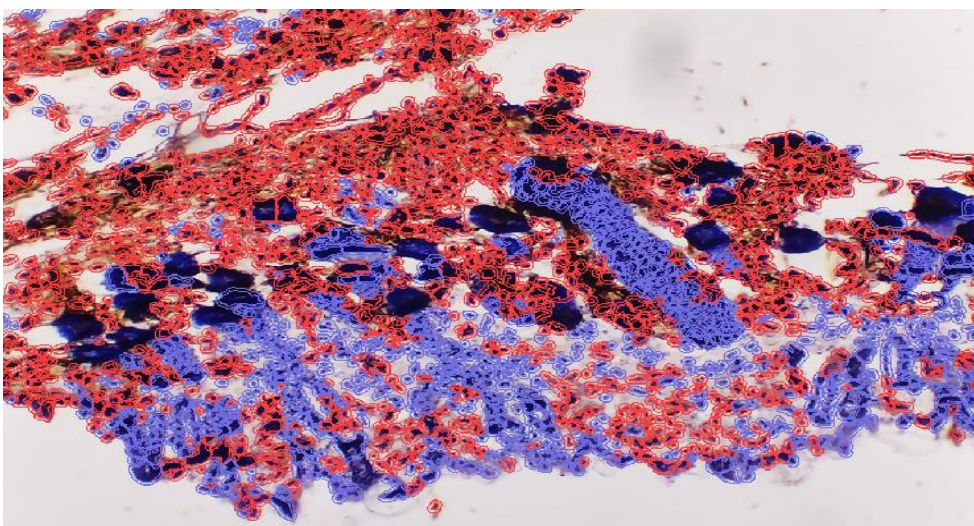
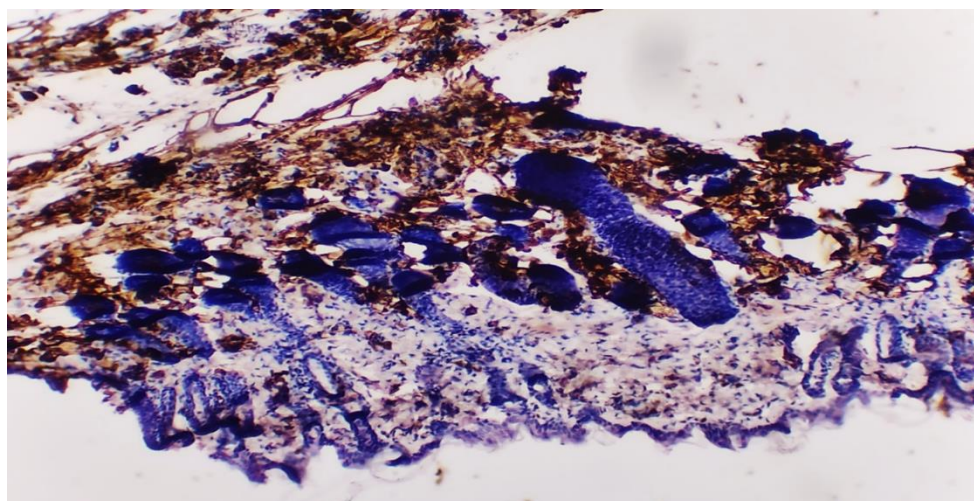


Figure 6. expression of the marker immunoglystochemical s-100 in the skin in experimentally called hyperteriosis. Positive expression 47.6%



Total number of identified cells	2185
Positive cells	809
Negative Cells	1376
Positive Expression	62,97 %
Total area	1092980 px <sup>2</sup>

Figure 7. expression of immunogystochemical s-100 marker in the skin in experimentally called hyperthyroidism.

It is used in oncology in the diagnosis of melanoma and other malignant tumors, in Neurology in head and spinal trauma, infant asphyxia and neurodegenerative diseases. In cardiology, it is used in heart failure and acute ischemia, and in rheumatology, it is used to detect rheumatoid arthritis, systemic lupus erythematosus, psoriasis and other autoimmune diseases and increase the effectiveness of treatment.

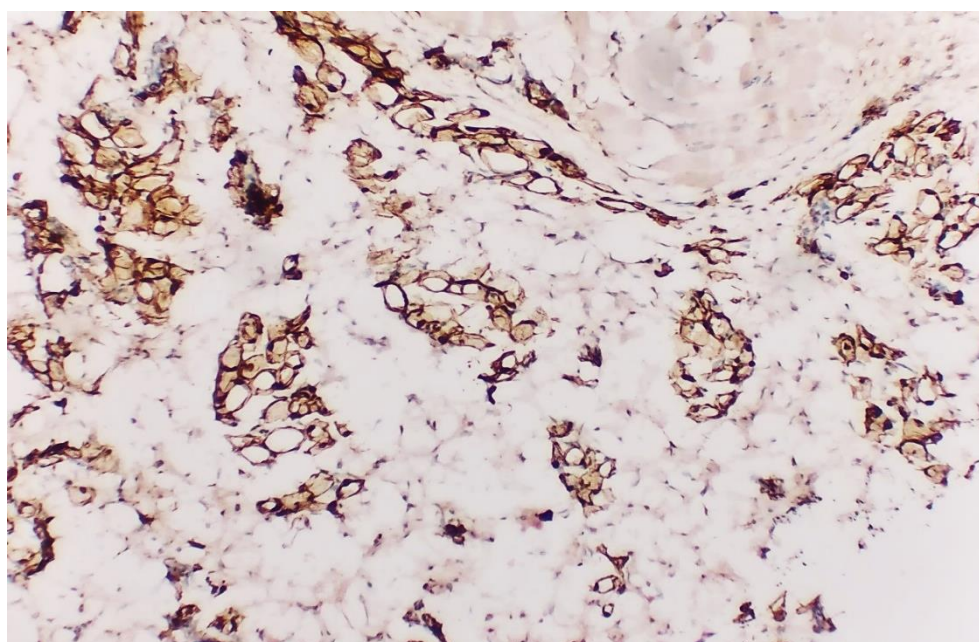


Figure 8. expression of immunogystochemical s-100 marker in the skin in experimentally called hyperthyroidism. Positive expression 94.8%

The results of immunogystochemistry with the marker S100 of micropreparations isolated from 18 white non-breeding bats isolated for research were studied. In the results obtained, strong expression of the skin on the dermal and hypodermic floors was observed. Almost all of the data obtained showed varying levels of expression, making them 50-60% expressed according to their level of expression, with 10 being 56% (see Figure 2,5,6,7), while the remaining 70-80% expressed were 4 being 22% (See Figure 4). The remaining 90-95% expressed were 22% in 4 (See Figure 1, 8 ).

## Conclusion

In the experimental method, expression of the S-100 marker was observed on dermal and hypodermic floors of the skin when hyperthyroidism was called using the drug L-thyroxine from white non-breeding rats. In all of the results obtained, the expression of the S-100 marker was found to be high. Expression was 50-60% in 10 of the materials obtained (56%), 70-80% in 4 (22%), and 90-95% in the remaining 4 (22%).

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