

**STRUCTURAL METAMORPHOSIS OF THYROID STATUS INITIATED BY
SAPONIN INTRODUCTION.****Nishanova A.A****Don A.N****Sharipova P.A****Reimnazarova G.D***Tashkent State Dental Institute, Tashkent, Uzbekistan***Resume.**

In the article, the study of morphometric parameters using the test-point method was carried out. The object of the study was the thyroid gland during the experimental administration of ladyginoside, which has an anti-atherosclerotic effect. The results obtained by morphometric methods rightly indicate that the daily administration of ladyginoside at a dose of 20 mg/kg leads to a change in the structure of the thyroid gland, indicating an increase in its morphofunctional activity.

Key words: morphometry, test-point method, thyroid gland, ladyginoside.

Introduction.

The study of morphometric parameters of the thyroid gland using the test-point method complements and expands the possibilities for researchers in describing the morphofunctional activity pattern of the organ [1, 2, 3, 4, 5, 6]. Thyroid gland studied by morphometric methods when experimentally administered with a preparation from plant raw material - saponin ladyginoside. The drug, having antiatherosclerotic and hypolipidemic effects [7, 8, 9], is a triterpene glycoside synthesized from *Ladignia bucharica* plant growing in Uzbekistan. It was obtained in glycosides laboratory of the Institute of Plant Substances Chemistry of the Academy of Sciences of the Republic of Uzbekistan (Head - Corresponding Member of the Academy of Sciences of the Republic of Uzbekistan, Professor N.K. Abubakirov).

Considering the role of the thyroid gland in the pathogenesis of atherosclerosis, on the one hand, and the availability of ladyginoside with anti-atherosclerotic properties, on the other hand, it was decided to study the structural metamorphosis of the thyroid gland during its administration using a complex of morphometric analysis.

Materials and methods. The experimental design involved 37 sexually mature male inbred rabbits with a baseline weight of 2.1 - 3.0 kg at the beginning of the experiment. The animals were divided into the following groups: Group 1 - 18 rabbits received ladyginoside orally daily at a dose of 0.002 g/kg animal weight, Group 2 was made up of intact control animals. In addition, the animals in each group were divided into subgroups according to the duration of the experiment: 7, 15 and 30 days.

After finishing the experiment and anatomical dissection the thyroid glands were weighed with the accuracy of 1 mg, carried out by the standard method before making micro preparations with slices of 5 - 10 microns thickness. Histological slices were coloured

with haematoxylin and eosin, for RNA according to Brasch, for DNA according to Felgen, SHIK reaction according to McManus-Hochkiss was carried out.

The numerical values of the structural components were determined using the test-point method with volumetric percentages of the thyroid components: intrafollicular colloid, follicular epithelium, interfollicular epithelium, and organ stroma [10, 11, 12].

The weight of the thyroid gland, colour reflecting the degree of bloodiness, and consistency were also taken into account in assessing the condition of the thyroid gland. Particular attention was paid to histostructure: size of follicles, condition of colloid, intensity of its staining, presence of vacuoles. The height of follicular epithelium was determined. The number of small, colloid-free follicles was taken into account. Colloid accumulation index "Follicle/Epithelium" - "F/E" was calculated [4] according to the formula:

Average follicle diameter, μm

"F/E" = -----

Doubled average height of follicular epithelium, μm

In addition to the above indices, an aggregate morphofunctional thyroid index (AMI) was calculated [1, 3, 4,], which implies that two groups of characteristics must be integrated to assess the performance of any organ by indirect indices. One group is the number of working elements (mass, volume, percentage, proportion, etc.), the other is the intensity of their functioning (indicators of cytometry, karyometrics, epithelium height, quantitative histochemistry, etc.).

AMI is calculated according to the formula: $0.25\text{Be} + 0.25\text{IN} + 0.25\text{Me}$, where Be is follicle epithelial height in μm , IN is the accumulation index: ratio of follicle diameter to doubled follicle epithelial height, Me is epithelial mass in g.

Results and discussion.

A descriptive study of the thyroid glands of intact animals in the control group indicated that the qualitative and quantitative parameters indicate their normal structure and correspond to the descriptions given in the experimental works performed in this region earlier [5, 6, 13].

The thyroid glands of animals treated with ladyginoside for 7 days were characterized by an increase in their relative weight. Qualitative differences in this group from the control were manifested by a decrease in the size of follicles, a change in the tinctorial properties of intrafollicular colloid in the form of its liquefaction, the appearance of marginal vacuolization, resulting in a colloid with festoon edges, in some places there were follicles with "foamed" colloid.

There was an increase in the height of the follicular epithelium, an increase in the relative volume of the interfollicular epithelium and stroma. The latter was due to the vascular component, which, according to some authors [7, 8, 14], indicates increased activity of the gland. There was also a decrease in the intensity of staining when using SHIF reagent, thyrocyte nuclei were less intensely stained by Felgen due to diffuse distribution of DNA grains, RNA was detected more clearly.

Quantitative analysis of the thyroid gland signs in rabbits treated with ladyginoside was carried out taking into account the currently accepted recommendations [1, 5, 6, 7]. Compared with the animals of the control group, in experimental rabbits there was an increase in the value of indicators, the rise of which indicates an increase in morphofunctional activity of the gland. We are talking about such indicators as the relative weight of the thyroid, the height of the follicular epithelium, the relative volume of the follicular epithelium, interfollicular epithelium and stroma, AMI.

The relative volume proportion of follicular epithelium changed insignificantly, while the proportion of interfollicular epithelium increased sharply, indicating an increased proliferation of typical thyroid epithelium and active follicular neoplasia. The SMP of the gland, taking into account changes in the most tested indices of histophysiological state, being 9.94 points, exceeds 3.7 times the AMI of control animals.

Increasing the experiment up to 15 days leads to further increase of relative gland mass up to 1.34 mg/100g. Marked signs of hypertrophy of the follicular epithelium and their nuclei, which when quantified is manifested in a further decrease in the "colloid accumulation index - F/E", the average diameter of the follicles. As after 7 days of the experiment, the relative volume of the follicular epithelium increased slightly, and a significant difference was revealed in the relative proportion of the interfollicular epithelium. SMP increased to 15.29 points on the average, differing both from the control animals, in which SMP was 2.64, and from the previous group of animals, in which it was 9.94.

In terms of discussion of the results, taking into account the literature and our own research data, it should be noted that the introduction of ladylinositide, leads to changes in the structure of the thyroid gland, interpreted as a gradual increase in the morphofunctional activity of the thyroid as the experiment lengthens [3, 11, 14].

Conclusion.

1. The results obtained in the experiment indicate that daily administration of ledginoside at the dose of 20.0 mg/kg of weight leads to changes in the structure of the thyroid gland, indicating an increase in its morphofunctional activity. At the same time, the initial metamorphosis in the morphology of the thyroid gland was detected as early as day 7 of the experiment, with a gradual increase in the indices, reaching maximum expression on day 30 of the experiment.

2. The morphometric methods tested in this study, allow the metamorphosis of thyroid status to be objectively assessed using a set of data. The value of the methods under consideration lies not only in the fact that they bring morphological analysis to a qualitatively higher level, but also in the affordability of using these techniques, as they do not require expensive equipment from researchers.

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