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KALAMUSH GORMONLARINING EKSPERIMENTAL TIREOTOKSIKOZDA VA AN`ANAVIY HAMDA NOAN`ANAVIY DAVOLASHDAN KEYINGI O'ZGARISHLARI

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ASOSNOMA

Qalqonsimon bez gormonlari ko'p fiziologik faoliyatda muhim rol o'ynaydi, shu jumladan hayvonlarning reproduktiv funksiyasi to'g'ri ishlashida, ularning rivojlanishini nazorat qilishda qatnashadi. Qalqonsimon bez gormonlarining ortiqchaligi yoki etishmasligi moyaklar funksiyasining o'zgarishiga olib keladi. Tireotoksikoz modeli chaqirilgan kalamushlarni va ularni an`anaviy hamda noan`anaviy davolashda gormonlarni qanday o'zgarishga uchrashi aniqlandi. kalamushlarda testosteron va qalqonsimon bez gormonlarining eksperimental tireotoksikozi hamda an`anaviy va noan`anaviy davo ko'rsatkichlari tahlil qilinganda birinchi tajriba (tireotoksikoz chaqirilgan) hayvonlari nazorat guruh kalamushlarga nisbatan qonidagi TTG miqdori keskin hamda erkin testosteron miqdori bir necha marotaba kamaydi, lekin qondagi T4 darajasi va erkin T4 darajasi oshdi. Merkazolil va zaytun moyi bilan davolangan kalamushlar merkazolil bilan davolangan guruh hayvonlari bilan solishtirilganda qonida TTG miqdori va erkin testosteron miqdori birmuncha ko'paydi, aksincha, qondagi T4 miqdori hamda erkin T4 miqdori kamaydi.

Kalit so'zlar
Kalamush, moyaklar, tireotoksikoz, gormon, testosteron, tiroksin, merkazolil, zaytun moyi.

ИЗМЕНЕНИЯ ГОРМОНОВ КРЫС ПРИ ЭКСПЕРИМЕНТАЛЬНОМ ТИРЕОТОКСИКОЗЕ, ПОСЛЕ ТРАДИЦИОННОГО И НЕТРАДИЦИОННОГО ЛЕЧЕНИЯ

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Обоснование

Гормоны щитовидной железы играют важную роль во многих физиологических функциях, в том числе в правильном функционировании репродуктивной функции животных и контроле их развития. Избыток или недостаток гормонов щитовидной железы приводит к изменению функции яичек. Определена модель тиреотоксикоза крыс и изменения гормонального фона при традиционном и нетрадиционном лечении. При анализе экспериментального тиреотоксикоза тестостерона и гормонов щитовидной железы у крыс, а также показателей традиционного и нетрадиционного лечения, содержание ТТГ в крови животных первого опыта (так называемого тиреотоксикоза) по сравнению с контрольной группой крыс было резко снижено и содержание свободного тестостерона содержание снизилось в несколько раз, но уровень Т4 в крови увеличился и уровень свободного Т4. У крыс, получавших мерказолил и оливковое масло, наблюдалось небольшое увеличение уровня ТТГ в крови и уровня свободного тестостерона, но снижение уровня Т4 и свободного Т4 в крови по сравнению с группой, получавшей мерказолил.

Ключевые слова

крыса, семенники, тиреотоксикоз, гормон, тестостерон, тироксин, мерказолил, оливковое масло.

CHANGES OF RAT HORMONES IN EXPERIMENTAL THYROTOXICOSIS AND AFTER TRADITIONAL AND UNCONVENTIONAL TREATMENT

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ABSTRACT

Thyroid hormones play an important role in many physiological functions, including the proper functioning of the reproductive function of animals and the control of their development. An excess or deficiency of thyroid hormones leads to changes in the function of the testicles. The thyrotoxicosis model of rats and the changes in hormones during traditional and unconventional treatment were determined. When experimental thyrotoxicosis of testosterone and thyroid hormones in rats and traditional and non-traditional treatment indicators were analyzed, the TTG content in the blood of the first experiment (called thyrotoxicosis) animals compared to the control group of rats was sharply decreased and the free testosterone content decreased several times, but the T4 level in the blood and increased free T4 levels. Rats treated with mercazolyl and olive oil showed a slight increase in blood TTG and free testosterone levels, but a decrease in blood T4 and free T4 compared to the mercazolil-treated group.

Key words

Rat, testes, thyrotoxicosis, hormone, testosterone, thyroxine, mercazolyl, olive oil.

Relevance of the topic: thyroid hormones play an important role in many physiological functions, including the proper functioning of the reproductive function, important in controlling their development [1]. The thyroid gland performs the activity of the gonads directly through its hormones (T4 and T3) [2].

Thyroid hormones affect the Leydig, Sertoli and germ cells of the testicles. An excess or deficiency of thyroid hormones leads to changes in testicular function, including sperm abnormalities. Hyperthyroidism is often associated with a decrease in sperm volume and sperm density, while hypothyroidism is associated with a decrease in sperm morphology [3].

In experimental thyrotoxicosis, sperm activity decreases, antioxidant protection changes, spermatogenesis is delayed [4]. According to Romano RM et al(2017), thyroid hormone deficiency reduces sperm viability and delays sperm passage through the epididymis.

In the pituitary gland, stimulated by luteinizing hormone, Leydig cells produce testosterone. When the androgen receptor binds to the Sertoli cell, the androgen receptor signaling pathway is activated [5].

A study conducted by Tina Kold Jensen (6) found that consumption of fish oil supplements was associated with improved testicular function, sperm volume and sperm count, larger testicular size, and free testosterone, which was estimated to be higher relative to luteinization. but Mustafa A (2021) Omega-3 intake negatively affects the steroidogenesis process[7].

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These scientific articles have comprehensively explained that the activity of thyroid hormones is closely related to the activity of internal organs, but there is not enough information on the topic of hormonal changes in experimental thyrotoxicosis and the protective role of essential oils in it, and the opinions of most scientists are contradictory, which in the future requires conducting scientific research on the topic.

Research materials and methods: The experiment was conducted on 131 white male rats of the reproductive period (3-5 months) weighing 200-250 g. The animals were bred in the laboratory vivarium of the Bukhara Medical Institute. Initially, the animals were divided into two groups. The number of rats in the control group is 40, and the number of animals in the experimental group is 91. The first experimental group was injected with levothyroxine sodium at a dose of 5.0 µg/100g for 14 days (Sabanov V.I 2017), and the control group was injected with an equivalent volume of 0.9% NaCl solution through a syringe, on the 15th day (105-day-old rat) Bukhara Medicine 20 rats from the control group and 28 rats from the experimental group were slaughtered by decapitation in the morphology laboratory of the Institute. Blood tests for hormones were taken from the animals. The rest of the rats were divided into 4 groups for one month: Group 1: the second control group of rats, 1.0 ml of drinking water was injected through a syringe into the mouth mesh through the root of the tongue into the rat's stomach; Group 2: the animals of the second experimental group were given 5 µg of mercazolyl drug in 1.0 ml of drinking water[Maksyutov R.R. et al. 2013] was sent to the stomach of the rat through the root of the tongue through the probe into the mouth mesh; Group 3: the third experimental group was administered to rats with 5 µg of mercazolyl in 1.0 ml of drinking water and thistle oil (1.0 ml) was injected into the rat's stomach through the root of the tongue through the tube of the mouth through a probe; Group 4: the fourth experimental group was given olive oil (1.0 ml) along with 5 µg of mercazolyl in 1.0 ml of drinking water by gavage to the mouth mesh through the root of the tongue into the rat stomach.

A total of 63 experimental animals (experimental groups 2, 3, 4) and 20 rats of the 2nd control group were slaughtered by decapitation at the Bukhara Medical Institute morphology laboratory at 136 days of age. Before slaughter, blood samples for hormones were taken from animals and examined by IXLA (immunochemiluminescent analysis).

Statistical processing of numerical data was carried out using Excel programs. Statistical hypotheses were analyzed using Student's t-test (Lapach S.N. 2001). All observed differences were considered significant at a significance level of $P < 0.05$.

Personal inspection results: Testosterone and thyroid hormones play an important role in the human and animal body. The thyroid gland produces two

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main hormones: triiodothyronine (T3) and more thyroxine (T4), which in the body makes T3, the biologically active form of the thyroid hormone T4. The production of thyroid hormones is regulated by a feedback loop involving the hypothalamus and pituitary gland. The hypothalamus produces thyrolibirin, which stimulates the production of thyroid-stimulating hormone (TTG) in the pituitary gland. TTG, in turn, stimulates the release of T3 and T4 from the thyroid gland into the bloodstream.

Testosterone and thyroid hormones have a complex relationship, and an imbalance in one can affect the other. Thyroid hormones directly affect the metabolism of sex hormones, including testosterone. Changes in thyroid function (hypothyroidism and hyperthyroidism) can disrupt optimal testosterone levels.

Overproduction of thyroid hormones increases the level of sex hormone-binding globulin (JGBG) in your body and causes an increase in bound testosterone. Because of this, less free testosterone remains in the blood. Hyperthyroidism negatively affects sperm production, which can lead to male infertility.

When the blood analysis of rats was checked, the average level of TTG in the blood of control group animals was equal to 2.78±0.3 μME/ml, and the average level of TTG in the blood of rats in the group induced with thyrotoxicosis (experiment 1) was 0.08±0.02 equal to μME/ml, the average level of TTG in the blood of animals treated with mercazolil (experiment 2) is 0.95±0.2 μME/ml, the average level of TTG in the blood of rats treated with mercazolil and olive oil It was found to be 1.89±0.2 μME/ml.

Changes in rat hormones after experimental thyrotoxicosis and conventional and unconventional treatment are shown in Table 1.

Experimental thyrotoxicosis of testosterone and thyroid hormones in rats and conventional and non-conventional treatment indicators

Table 1.

Group	TTG μME/ml	T4 μg/dl	T4 (free) ng/dl	Testosterone (free) pg/ml
control	1,3-4,1 2,78±0,3	5,3-7,2 6,14±0,2	1,2-1,5 1,37±0,03	17,0-43,0 29,8±2,8
Experiment 1 (thyrotoxicosis model)	0,01-0,2 0,08±0,02	12,2-16,5 15,3±0,46	3,2-6,6 5,1±0,36	8,0-24,0 11,25±1,73
Experiment 2 (treatment with mercazolil)	0,3-2,1 0,95±0,2	7,7-13,1 11,23±0,6	1,5-2,1 1,73±0,06	12,0-25,3 18,6±1,44
Experiment 3 (treatment with mercazolyl and olive)	0,8-2,7 1,89±0,2	6,7-13,7 9,8±0,75	1,4-1,9 1,57±0,05	13,0-28,0 21,5±1,62

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The average level of thyroxine (T4) in the blood of control group rats is equal to 6.14±0.2 µg/dl. The average level of T4 in the blood of rats of the first experimental group is 15.3±0.46µg/dl, and the average level of T4 in the blood of rats of the second experimental group is equal to 11.23±0.6µg/dl. and the average level of T4 in the blood of animals of the olive group is equal to 9.8±0.75µg/dl.

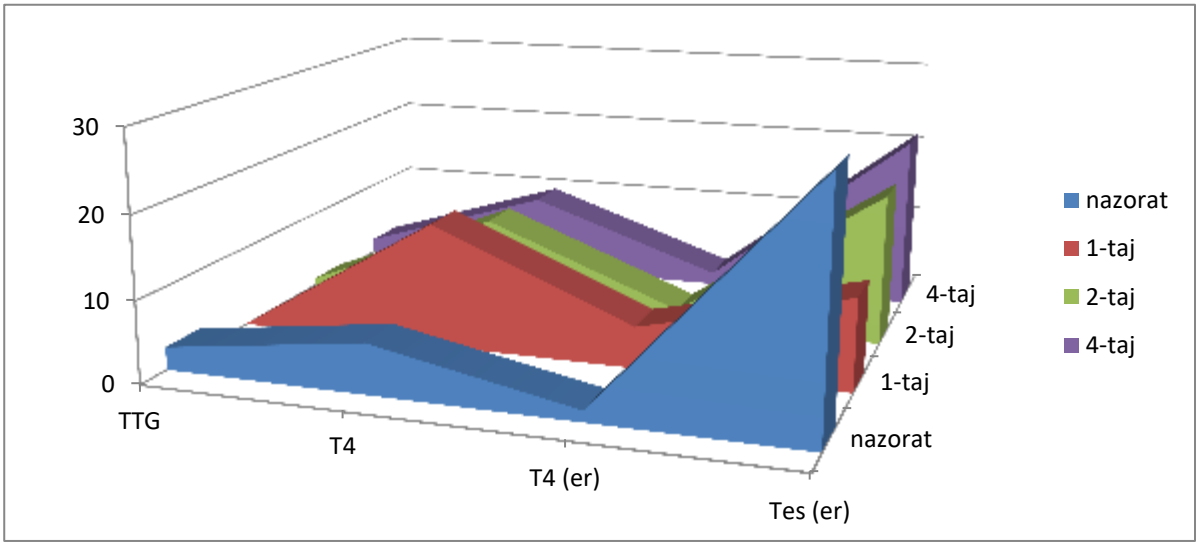
The average level of free thyroxine (free T4) in the blood of rats in the control group is equal to 1.37±0.03 ng/dl. The average level of free T4 in the blood of rats with thyrotoxicosis is 5.1±0.36 ng/dl, and the average level of free T4 in the blood of animals treated with mercazolil (experiment 2) is 1.73±0.05 ng/dl. dl is equal to The average level of free T4 in the blood of the experimental group treated with mercazolyl and olive oil was 1.57±0.05 ng/dl.

The average level of free testosterone in the blood of the control group was 29.8±2.8 pg/ml. The average level of free testosterone in the blood of animals of the first experimental group is 11.25±1.73 pg/ml. In the second experiment (treatment with mercazolil), the average amount of free testosterone in the blood of group rats was 18.6±1.44 pg/ml, and the average amount of free testosterone in the blood of animals treated with mercazolil and olive oil was 21.5±1.62 was pg/ml. Experimental thyrotoxicosis of testosterone and thyroid hormones in rats and conventional and non-conventional treatment indicators

It is shown in Figure 1.

Experimental thyrotoxicosis of testosterone and thyroid hormones in rats and conventional and non-conventional treatment indicators

Figure 1



Summary: Thus, when experimental thyrotoxicosis of testosterone and thyroid hormones in rats and conventional and non-conventional treatment indicators were analyzed, the TTG content in the blood of the first experimental animals (called thyrotoxicosis) decreased dramatically and the amount of free testosterone

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decreased several times compared to the control group rats, but increased blood T4 and free T4 levels.

Rats treated with mercazolyl and olive oil showed a slight increase in blood TTG and free testosterone levels, but a decrease in blood T4 and free T4 compared to the mercazolil-treated group.

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