International Journal of Medical Sciences And Clinical Research (ISSN – 2771-2265)
VOLUME 03 ISSUE 12 PAGES: 34-38
SJIF IMPACT FACTOR (2021: 5. 694) (2022: 5. 893) (2023: 6. 184)
OCLC – 1121105677
Crossref doi Google Scholar WorldCat MENDELEY
Publisher: Oscar Publishing Services

Journal Website: https://theusajournals.com/index.php/ijmscr

Research Article

THE TOXIC EFFECT PESTICIDES THROUGH MATERNAL ORGANISM POSTNATAL GENERATION IN THE THYROID GLANDS

Submission Date: December 07, 2023, **Accepted Date:** December 12, 2023,
Published Date: December 17, 2023
Crossref doi: https://doi.org/10.37547/ijmscr/Volume03Issue12-07

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ABSTRACT

The thyroid gland of posterity, got from full-grown with chronic intoxication by pesticides vigor and titanium, have been studied on 1-90 day after birth using electron microscopy methods. It is revealed that intoxication of the maternal organism vastly slows the rates of postnatal formation of secretory follicles. It is expected that discovered ultrastructural changes of the thyrocytes are the morphological substratum of the dysfunctions of the thyroid gland.

KEYWORDS

Thyroid of posterity, pesticides, chronic intoxication.

INTRODUCTION

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The use of pesticides is typical for modern agricultural production in all economically developed countries. because without their production and applications agriculture carries huge losses. Of the allowed more than half of the use of pesticides in the republic belongs to the groups pyrethroid and pyrazole drugs. Despite the relatively low toxicity of these compounds, the probability of their negative impact on the nervous, endocrine and immune systems remains very high. In this regard, pesticides pose the greatest danger for pregnant women and their offspring due to the high sensitivity of the developing nervous, endocrine and immune systems of the fetus and newborn to toxic effects. Shown, that the introduction of even small doses of pesticides into the body of pregnant and breastfeeding women females adversely affect the condition the thyroid gland of their offspring [3,4,5]. Exposure to low doses of pesticides can negatively affect the morbidity of the population in general, and especially on indicators of health of women and children [6]. In this regard, it is currently very the problem of studying more subtle mechanisms of toxic action is urgent pesticides, search for means and methods identification of preclinical negative changes in the body of people or their offspring, occurring under the influence of small doses of pesticides. The results of these studies will undoubtedly contribute to the disclosure of the mechanisms of toxic the action of pesticides and allow the development of secondary prevention measures and pathogenetic therapy of toxic effects. In addition, they can serve the basis for revising the hygienic regulations of pesticides.

Purpose of work.

Revealing the structural and functional mechanisms of the toxic effect of pesticides lambda-qi halotrin (LST) and fipronil (FPN) on the thyroid and thymus glands of the offspring under the conditions of their influence through the mother's body.

METHOD

For In the experiments, an insecticide titanium was used, registered in the republic by the Uzbek-German LLC “Euro Team”. Titanium active substance is LST.

Another drug registered in our Republic in as an effective insecticide, is vigor, an active ingredient which is the FPN. Physicochemical and toxicological characteristics vigor and titanium are described in sufficient detail in our publications [1, 2].

Experiments were carried out on whites adult virgin female rats Wistar rats weighing 150-170 g, and sexually mature male rats were used only for fertilization. Then female rats were divided into three groups of 45 rats in each. The first (experiment 1) group of rats was injected through the mouth using a probe LCT at the rate of 8 mg / kg / daily. The second (control) group received in the same way. The second (experiment 2) group of rats FPN was introduced in a similar way from calculation 3.6 mg / kg / daily, which

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corresponded to 1/100 of the drug LD50. The third group of rats that received one the same volume of sterile physiological solution served as a control. Administration of both pesticides to experimental groups rats were carried out daily for 75 days until the end of experiments. On the 31st day of experiments, females of all groups mated with males for fertilization. The onset of pregnancy was monitored by the presence of sperm during vaginal smears. After the onset during pregnancy, the females are separated from the males and placed in separate cages for further research. Offspring from all groups of animals were euthanized on 7, 14, 21 and 30 days after birth, under light anesthesia with ether. After sacrifice, the blood serum was determined concentration of thyroxine (T4), triiodothyronine (T3) and thyrotropic hormone (TTH) by enzyme immunoassay using special kits the company "Human" (Germany) and the spectrophotometer "Singl" (Germany). Thyroid gland (Thyroid gland) and thymus gland (thymus, Tm) was studied using morphometric, immunohistochemical, and electron microscopic methods. All digital data are statistically processed using a package of computer of programs, differences satisfying P <0.05 were considered significant.

RESULT

Maternal exposure to pesticides significantly reduced the rate of growth and formation of thyroid gland in the offspring. There was a significant decrease in the mean area of thyroid sections compared with the corresponding age of the control group, which indicated a decrease in the volume of the organ as a whole Average the total area of follicles of all classes, and, accordingly, the number and height of thyrocytes in them were significantly lower than the control. A pronounced lag in the rates of neoplasm and follicle formation was revealed in the experimental groups. animals. A decrease in the size of mitochondria, as well as the components of the endoplasmic reticulum and the Golgi complex of thyrocytes, was found.Morphological the data fully corresponded to the indicators of hormones, indicating a significant decrease in concentration T4 and T3 ... The TSH level is moderate. decreased, indicating a violation

thyrotropic function of the pituitary gland. Along with with these, certain disorders of postnatal growth and development of microenvironmental cells Tm of offspring Starting from the moment of birth, a tendency towards a decrease in the number of epithelio-reticular cells (ERC) per unit area

lobules. Moreover, the average number of ERK decreased more clearly in the cortical the thymus zone. Electron microscopy in the ERC of experimental animals revealed hypoplasia of the endoplasmic reticulum and the Golgi complex, as well as the heterogeneity of secretory vacuoles, indicating a violation of the secretory activity of cells All this testified about slowing down the formation process

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cellular microenvironment in the thymus and violation of the secretory function of the ERK, which contributed to the disruption of regulatory thymus activity.

CONCLUSIONS

Chronic intoxication of the body mothers with pesticides leads to a significant slowdown in the rates of postnatal growth and formation of thyroid secretory follicles in the offspring. Ultrastructural changes in the form disorganization of the granular endoplasmic reticulum and destruction of other cytoplasmic organelles of thyrocytes represent a morphological substrate dysfunction of the thyroid gland arising in the postnatal ontogenesis of the organ under conditions of chronic intoxication.

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