

EFFECT OF HERBICIDAL PREPARATIONS ON BLOOD PICTURE

Komilova Bakhmal Odilovna

Lecturer, Department of Physiology Bukhara State Medical Institute,
Bukhara, Republic of Uzbekistan.

ABSTRACT

The article provides information on the effect of pesticides on the function of the body, as well as herbicides on the blood corpuscle.

INTRODUCTION

The problem of environmental protection is currently not only relevant, but also global. In particular, the need for widespread use of pesticides in order to increase the productivity of agricultural crops has led to the emergence of a danger of intoxication of the population as a result of the accumulation of pesticides in various environmental objects.

Herbicides can be applied in two ways, by spraying vegetative plants or directly into the soil. In the first case, up to 30% of the herbicide falls on the vegetative part of the plant, everything else penetrates into the soil. In the second case, the chemical completely enters the soil [1]. As a result of repeated use of pesticides, they accumulate in the soil. Further transformation of herbicides in the environment depends on many factors: soil sorption capacity, moisture, soil temperature, community of soil bacteria, the ability of the herbicide to photo- and chemical decomposition, biodegradation, etc.

Some herbicides are irreversibly adsorbed on soil particles, while others are unable to form stable complexes, as a result of which they migrate through the soil layers and get into surface and ground waters [1-2]. As a result, residual amounts of herbicides are found in environmental objects, feed, food, in animal tissues and human biomaterial (urine, breast milk) [5-6]. Due to non-compliance with the norms for the use of herbicides in Russia, it is believed that 14,000 people die annually, and in 700,000 cases pesticides are the cause of diseases [3]. Herbicide pollution of the environment is an environmental problem not only in Russia, but all over the world [4].

In this regard, chemicalization of agriculture is currently impossible without a thorough study of the effect of new samples of fertilizers, defoliant pesticides on the human body and animals. In addition, it is necessary to create such chemical means of protecting plants from weeds and pests that have minimal toxicity. The herbicide preparation "Edil" (at the same time it is also a desiccant) was transferred to commercial production.

When studying the effect of this drug on the functional state of the blood system in hot climates, it was found that the toxicity of the drug at high ambient temperatures increases. Moreover, the magnitude of doses of 4-9 mg / kg of body weight was equal to the square deviation from the arithmetic mean. However, small doses of the drug are encountered with a probability (approaching unity) of their penetration into the body occurs in different ways: through the contaminated skin of the hand, food, drinking water, through the respiratory tract. In this regard, the study of the effect of this drug on animals and humans precisely in small quantities of pesticides is of scientific and practical interest.

The experiments were carried out on rabbits. Within one month, the drug was injected once and repeatedly into the abdominal cavity (reos). On the 1st, 3rd, 7th, 10th, 14th and 30th days after the administration of the drug, blood was taken from the ear vein for analysis. Analysis of hematological parameters made it possible to judge not only the state of the circulating blood, but also to some extent hematopoiesis. With a single injection of the drug at a dose of 4 mg / kg of body weight in conditions of normal maintenance of rabbits, the changes in the blood picture were as follows.

Changes in leukocytes (in white blood cells) began after administration of the drug on the third day, and it was expressed in an increase in the number of leukocytes in the peripheral blood. The leukogram showed an increase in stab, segmented leukocytes and monocytes, a decrease in the number of lymphocytes, and an increase in the number of destroyed cells. Perhaps these changes have arisen as a result of damage to the bone marrow and they are aimed at increasing the strength of the body. By the thirtieth day of the experiments, the normalization of the studied indicators is noted, which is possibly associated with the elimination of the drug from the body. When the animals are overheated in a heat chamber at a temperature of 40 ° C for one hour, the toxic effect increases from the first day of the experiment. An increase in the neutrophilic forms of monocytes is noted in the leukogram. At the same time, mitotic activity was observed and cells were destroyed.

A single injection of the drug into the abdominal cavity at a dose of 9 mg / kg in all experimental animals in the first days causes a change in the picture of white blood cells (leukocytes). In leukocytes, leukocytosis with a lymphatic tendency is observed, a noticeable decrease in segmented neutrophils. By the thirtieth day, the changes listed above disappear, the indicators return to their original level.

The daily administration of the drug in an identical dose causes more pronounced shifts in the studied parameters in comparison with a single administration. For the first time days of the experiment (1,3,7th) in the leukocyte formula, lymphocytosis was noted against the background of neutrophils (a slight shift to the left, an increase in the number of basophils). Species-altered cells are found in the blood lubricant: vacuolated leukocytes. By the thirtieth day of the experiment, normalization is noted. Daily administration of the drug did not lead to the summation of the effect, on the contrary, the body's reaction to the drug in the first days of the experiment was greater than the subsequent ones.

After a single oral administration of the drug at a dose of 4 mg / kg, leukopenia was observed in all animals in the first days without significant changes in the leukocyte formula. From the third day of the experiment to the thirtieth day, there was a slight leukocytosis with a weak tendency to lymphocytosis. Daily oral administration of the drug in an identical dose, in the first days of the experiment, leads to leukopenia, which is replaced in the following days by an insignificant leukocytosis, without changes in the leukocyte formula.

With a single oral administration of the drug at a dose of 9 mg / kg of body weight in the first days, leukocytosis is observed, in the leukocyte formula - a shift to the left, a decrease in segmented neutrophils and an increase in lymphocytes. Starting from the 7th day, the marked changes in the blood picture begin to gradually normalize and by the thirtieth day all indicators return to the initial background.

Daily oral administration of the drug in an identical dose causes more pronounced shifts in the blood picture. In the first days, leukopenia is noted, which is replaced in the following days by a slight leukocytosis with a lymphatic tendency. Based on literary sources, it can be concluded that herbicides at various concentrations, exposure times and methods introduction into the body of mammals are able to inhibit the processes of blood branching, show carcinogenic properties, negatively affect the internal Renny organs and reproduction of animals. Experimental data showed quantitative and qualitative changes in formed blood cells.

It is interesting to note that in all experiments the drug, when administered orally, has a more sensitive effect on the studied parameters of leukocytes in the first days of exposure. With its daily introduction, there is no summation of the effect of its action. Obviously, the lining of the stomach and intestines is somehow a protective barrier. The degree of changes in the indicators of white blood cells depends on the dose, route, frequency of administration and ambient temperature.

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