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МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ
ПОЛТАВСЬКИЙ ДЕРЖАВНИЙ АГРАРНИЙ УНІВЕРСИТЕТ
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СУЧАСНІ АСПЕКТИ ЛІКУВАННЯ І ПРОФІЛАКТИКИ ХВОРОБ ТВАРИН

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ВИЯВЛЕННЯ ОЗНАК ФАЛЬСИФІКАЦІЇ ОРГАНІЧНОЇ КРУПИ ІЗ СОЇ ЗА РЕЗУЛЬТАТАМИ ВИЗНАЧЕННЯ ГМО ПРИ ПРОВЕДЕННІ СУДОВОЇ ЕКСПЕРТИЗИ ЗА СПЕЦІАЛЬНІСТЮ 8.12 «ДОСЛІДЖЕННЯ ХАРЧОВИХ ПРОДУКТІВ» ……. 190

Jawad Marwa, Hubskyi Yu. A., Melnychuk V. V., Yevstafieva V. O.
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LEUKOCYTE FORMULA PARAMETERS IN CAT BLOOD DURING *CYSTOISOSPORA INVASION*

Introduction. Felis catus is a domestic feline species that has coexisted with humans for millennia. In recent decades, the number of domestic cats – as well as the number of stray animals – has increased, leading to frequent contact between them and humans [2]. At the same time, cats are susceptible to various endoparasites, such as protozoa. Among these, the genus Cystoisospora is widely distributed worldwide [1].

Researchers note that *Cystoisospora felis* and *Cystoisospora rivolta* are species that infect domestic cats. At the same time, there are at least three different types of cystoisospores in cats: large oocysts measuring approximately 40 μm; medium-sized oocysts measuring approximately 25 μm; and tiny oocysts approximately 10–12 μm in length [5]. The causative agent of cystoisosporosis is transmitted through the ingestion of sporulated oocysts present in the environment or through the ingestion of paratenic hosts containing cysts. Unsporulated oocysts are shed in the feces of infected cats into the environment, where the infective stage of the pathogen develops through sporulation. Sporulated oocysts remain infective for many years [4].

Cystoisosporosis is known to be characterized by high morbidity and, at times, mortality. Although the infection is predominantly asymptomatic, severe clinical signs may develop in immunocompromised animals, complicating treatment [3]. Therefore, it is important to investigate the pathogen's impact on the blood leukocyte formula of infected cats.

The aim of the study was to investigate blood leukocyte formula parameters in cats at various levels of cystoisospora invasion**.**

Materials and methods. The research was conducted during 2025–2026 at the Laboratory of the Department of Parasitology and Veterinary-Sanitary Expertise of Poltava State Agrarian University and at the private veterinary clinic "ZooLyuks" (Kyiv).

The study involved 18 cats owned by residents of Kyiv, divided into three groups of six animals each: one control group (clinically healthy cats) and two experimental groups (naturally infected with the causative agent of cystoisosporosis at different II: <500 oocysts/g and >500 oocysts/g). The proportions of different leukocyte types were determined using standard methods.

Mathematical analysis of the obtained data was performed using the Microsoft Excel software package by calculating the arithmetic mean (M), standard deviation (SD), and probability level (P) via one-way analysis of variance (ANOVA) using the Fisher criterion.

Research results. The study established that at cystoisospora invasion intensities exceeding 500 oocysts/g, the blood leukocyte differential of the experimental cats showed a significant 2.2-fold increase in the eosinophil count (3.3 ± 0.8 %; $P < 0.01$ compared to 1.5 ± 0.8 % in the control group) and a 2-fold increase in the band neutrophil count (2.0 ± 0.6 %; $P < 0.05$ compared to 1.0 ± 0.6 % in the control group) (Fig. 1).

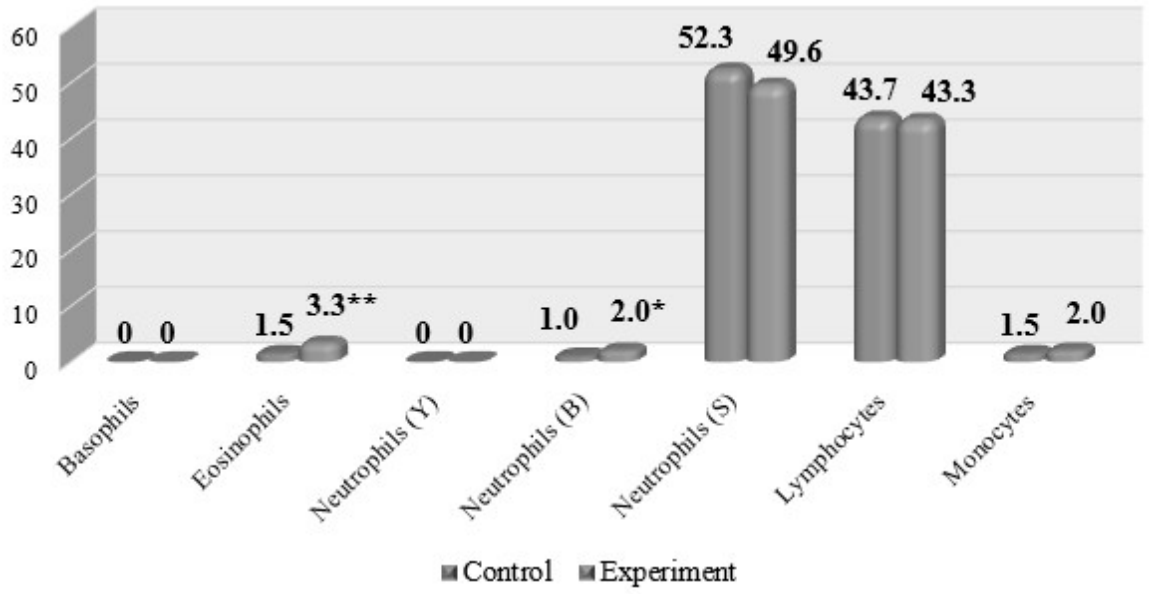


Fig. 1. Leukocyte formula parameters in cat blood during cystoisosporosis, II >500 oocysts/g (M±SD, n=6): Y – young forms, B – band neutrophils, S – segmented neutrophils; * – P<0.05, ** – P<0.01 – relative to the control group

At the same time, in cats infected with cystoisospores with an infection intensity of less than 500 oocysts/g, a slight 1.4-fold increase in the eosinophil count (3.3±0.5 %; P <0.05 compared to the control group) and a 1.5-fold increase in the monocyte count (3.5±0.5 %; P< 0.05 compared to the control group value of 2.3±0.8 %) were observed in the blood leukocyte differential (Fig. 2).

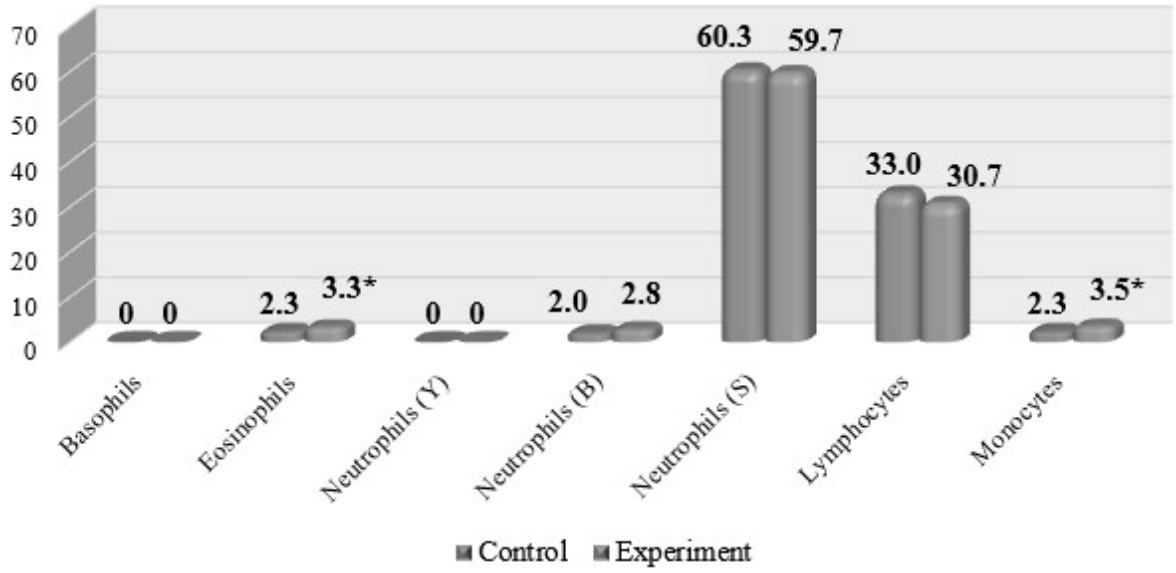


Fig. 2. Leukocyte formula parameters in cat blood during cystoisosporosis, II <500 oocysts/g (M±SD, n=6): Y – young forms, B – band neutrophils, S – segmented neutrophils; * – P<0.05, ** – P<0.01 – relative to the control group

Thus, changes in the feline leukogram associated with cystoisosporosis depend on the intensity of the infection. Specifically, in cases of heavy infection, the disease manifests as marked eosinophilia and neutrophilia with a left shift, indicating an acute inflammatory process. Conversely, in cases of low infection intensity, mild eosinophilia and monocytosis are observed in

the blood of infected cats, suggesting a chronic course of the disease and the activation of cellular immunity.

Conclusions. 1. It was established that at an infection intensity exceeding 500 oocysts/g, cystoisosporosis is characterized by a 2.2-fold increase ($P<0.01$) in the number of eosinophils and a 2-fold increase ($P<0.05$) in the number of neutrophils in the blood of infected cats.

2. At infection intensity levels below 500 oocysts/g, cystoisosporosis is characterized by a 1.4-fold increase ($P<0.01$) in the number of eosinophils and a 1.5-fold increase ($P<0.05$) in the number of monocytes in the blood of infected cats.

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