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MAIN HELMINTHOSES OF CHICKENS AND THEIR CONTROL IN THE CENTRAL GEOGRAPHICAL AND CLIMATIC REGIONS OF UZBEKISTAN

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Abstract: This article presents scientifically grounded research findings on the most prevalent helminthiases and helminth fauna among chickens raised in household farms across the central geographical and climatic regions of the Republic of Uzbekistan — namely, Samarkand, Jizzakh, and Syrdarya provinces. During the study, the main helminth species affecting chickens were identified, and their morphological and biological characteristics, habitats, and parasitic development stages were examined. Furthermore, the seasonal dynamics of helminth infections and their correlation with zoogeographic factors were assessed. Based on the results obtained, practical recommendations were developed to improve control and prevention measures against helminthiases in the poultry sector of these regions.

Key words. *ascariasis, heterokidosis, capillariosis, Helminth fauna, Ascaridia galli, Heteraks gallinarum, Capillaria obsignata, C.bursata.*

Аннотация: В данной статье представлены научно обоснованные результаты исследований, проведённых в центральных географико-климатических регионах Республики Узбекистан — в Самаркандской, Джизакской и Сырдарьинской областях, среди кур, содержащихся в

частных подворьях населения. В ходе исследований были выявлены основные виды гельминтов, поражающих кур, изучены их морфологические и биологические особенности, а также среда обитания и стадии паразитирования. Кроме того, дана оценка сезонной динамики гельминтозов и их связи с зоогеографическими факторами. На основании полученных результатов разработаны практические рекомендации по совершенствованию мер борьбы и профилактики гельминтозов в птицеводстве указанных регионов.

Ключевые слова. *аскаридоз, гетерокидоз, капилляриоз, гельминтофауна, Ascaridia galli, Heteraks gallinarum, Capillaria obsignata, C.bursata.*

Relevance of the Topic. It is well known that poultry farming is one of the key drivers of the livestock sector, providing the population with dietary meat, eggs, and supplying the light industry with other by-products.

It is important to emphasize that in recent years, the President of the Republic of Uzbekistan and the relevant state authorities have paid special attention to the development of this sector in line with modern global standards.

In particular, developing and widely implementing effective measures to combat various infectious, invasive, and non-communicable diseases among poultry is a critical task in preventing the economic damage and health risks to humans caused by these diseases.

It is well-known that helminthiases are widespread, especially among chickens, causing not only direct pathological effects but also increasing the susceptibility of the animal's body to various infectious diseases, reducing the productivity of livestock in terms of meat and egg production, and lowering product quality. In some cases, it can even lead to the death of the animals. From this perspective, poultry farmers, veterinary practitioners, and experts in the field of science should pay special attention to the spread of helminthiases

and the development of effective treatment and preventive measures in household farms and poultry enterprises.

Based on this principle, research was conducted to identify helminth infections and helminth fauna among chickens kept in household farms in the central regions of the Republic of Uzbekistan, specifically in the Samarkand, Jizzakh, and Syrdarya regions.

Size and Methods of the Study. The research was conducted in the Samarkand, Jizzakh, and Syrdarya regions of the Republic of Uzbekistan. A total of 747 chickens from these regions were examined using helminthoskopical methods, including the Fyulleborn method, sequential washing, and the TGYo method.

Results of the Study. In Jizzakh region, of the 167 chickens examined, 70 were found to be infected with nematodes, accounting for 41.9% of the total, with mixed nematode infection observed in 34 out of 77 chickens (44.2%) from the Pakhtakor district. Of these, 3 chickens (3.89%) were infected with Ascaridiosis, 11.7% (8 chickens) had Heterakidosis, and 33 chickens (42.9%) were infected with Capillariasis. In the research conducted in the Sharof Rashidov district, a total of 38 chickens kept in household farms were examined using the same methods. Among them, 5 chickens (13.2%) were found to be infected with nematodes. Of these, 3 chickens (7.89%) had Ascaridiosis, 1 chicken (2.63%) had Heterakidosis, and 2 chickens (7.89%) were infected with Capillariasis eggs (Table 1).

Table 1

Extent of Nematode Infections in Chickens from Different Districts of Jizzakh Region

District	Total Number of Chickens Examined	Number of Infected Chickens	Infection Rate (EZ)	Types of Nematode Infections

Forish District	52	31	59,6%	21 Ascaridiosis (40.4%), 17 Heterakidosis (32.7%), 27 Capillariasis (51.9%)
Pakhtakor District	77	34	44.2%	3 Ascaridiosis (3.89%), 8 Heterakidosis (11.7%), 33 Capillariasis (42.9%)
Sharof Rashidov District	38	5	13.2%	3 Ascaridiosis (7.89%), 1 Heterakidosis (2.63%), 2 Capillariasis (7.89%)

Research Findings During our research, samples taken from the Forish district showed a higher prevalence of helminth eggs compared to the two other districts mentioned above. Among the 52 chickens examined, 40.4% were infected with Ascaridiosis, 32.7% with Heterakidosis, and 51.9% (27 chickens) had Capillariasis eggs. The overall extent of nematode infection, including mixed infections, in this district was found to be 59.6%. (Table 1)

Table 2

Extent of Nematode Infections in Chickens from Different Districts of Syrdarya Region

District	Total Number of Chickens Examined	Number of Infected Chickens	Infection Rate (EZ)	Types of Nematode Infections
Mirzaabad District	54	13	24.1%	7 Ascaridiosis (12.9%), 4 Heterakidosis (7.4%), 11 Capillariasis (20.4%)
Guliston District	55	31	56.4%	23 Ascaridiosis (41.8%), 21 Heterakidosis (38.2%), 16 Capillariasis (29.1%)
Boyovut District	47	34	72.3%	14 Ascaridiosis (29.8%), 16 Heterakidosis (34.0%), 26 Capillariasis (55.3%)
Xovos District	50	27	54%	19 Ascaridiosis (38%), 16 Heterakidosis (32%), 13 Capillariasis (26%)
Sardoba	53	26	49.1%	11 Ascaridiosis

District	Total Number of Chickens Examined	Number of Infected Chickens	Infection Rate (EZ)	Types of Nematode Infections
District				(20.7%), 22 Heterakidosis (41.5%), 16 Capillariasis (30.2%)

In Syrdarya region, a total of 259 chickens were examined using fecal samples, which were collected in a clean state and subjected to helminthoscopy. The study revealed that Ascaridiosis, Heterakidosis, and Capillariasis are also widespread among chickens in Syrdarya region. The research results showed that 50.58% (131 chickens) were infected with nematodes. Specifically, 74 chickens (28.57%) had Ascaridiosis, 79 chickens (30.5%) had Heterakidosis, and 79 chickens (30.5%) were infected with Capillariasis eggs.

In the Syrdarya region, the investigations were carried out in several districts, starting with the Mirzaabad district. Fecal samples were taken from 54 chickens kept in household farms, and helminthoscopy was conducted at the district veterinary laboratory. The results showed that 7 chickens were infected with Ascaridiosis, 4 with Heterakidosis, and 11 chickens had Capillariasis eggs. The extent of infection in the examined chickens was 12.9% for Ascaridiosis, 7.4% for Heterakidosis, and 20.4% for Capillariasis.

During our research, the prevalence of helminths was found to be higher in samples taken from the Forish district compared to the other two districts. Among the 52 chickens examined, 40.4% were infected with Ascaridiosis, 32.7% with Heterakidosis, and 51.9% (27 chickens) had Capillariasis eggs. The overall extent of nematode infection, including mixed infections, in this district was found to be 59.6%. (Table 2)

Similarly, in the Guliston district, fecal samples were collected from 55 chickens and examined using the Fülleborn method at the district veterinary laboratory. The results showed that in 31 out of 55 samples (56.4%), mixed nematode infections were found. The individual infection rates were as follows: 41.8% for Ascaridiosis, 38.2% for Heterakidosis, and 29.1% for Capillariasis.

In the Boyovut district, 47 fecal samples were collected from household chickens. The examination revealed that 34 chickens (72.3%) were infected with nematodes, with the following infection rates: 29.8% for Ascaridiosis, 34.0% for Heterakidosis, and 55.3% for Capillariasis.

In Xovos district, 50 chickens were examined, and the infection rate was found to be 54%. The infection breakdown was as follows: 38.0% for Ascaridiosis, 32.0% for Heterakidosis, and 26.0% for Capillariasis.

In Sardoba district, the prevalence of nematode infections in chickens was relatively high. Of the 53 chickens examined, 11 chickens (20.7%) were infected with Ascaridiosis, 22 chickens (41.5%) with Heterakidosis, and 16 chickens (30.2%) with Capillariasis. The overall nematode infection rate in the examined chickens was 49.1% (Table 2).

Research in Samarkand Region In Bulung‘ur district of Samarkand region, 51 chickens, in Tayloq district 96 chickens, in Ishtixon district 82 chickens, in Jomboy district 44 chickens, and in Pastdarg‘om district 48 chickens were examined, totaling 321 chickens from households raising egg-laying chickens. Fecal samples were collected from these chickens and were subjected to helminthological examination (Table 3).

In the scientific study conducted in Bulung‘ur district, fecal samples were taken from 51 chickens in households. Of these, 35 chickens showed mixed nematode infections. Therefore, the overall nematode infection rate was 68.6%. The specific rates for different nematode infections were as follows: Ascaridiosis in 68.6%, Heterakidosis in 54.9%, and Capillariasis in 43.1% of the chickens examined.

Table 3

Extent of Nematode Infections in Chickens from Different Districts of Samarkand Region

District	Total Number of Chickens Examined	Number of Infected Chickens	Infection Rate (EZ)	Types of Nematode Infections
Bulung'ur District	51	35	68.6%	68.6% Ascaridiosis, 54.9% Heterakidosis, 43.1% Capillariasis
Tayloq District	96	44	45.8%	36.5% Ascaridiosis, 22.9% Heterakidosis, 39.6% Capillariasis
Ishtixon District	82	63	76.8%	39.0% Ascaridiosis, 64.6% Heterakidosis, 41.5% Capillariasis
Jomboy District	44	21	47.7%	43.2% Ascaridiosis, 38.6% Heterakidosis, 47.7%

District	Total Number of Chickens Examined	Number of Infected Chickens	Infection Rate (EZ)	Types of Nematode Infections
				Capillariasis
Pastdarg'om District	48	25	52.1%	47.9% Ascaridiosis, 37.5% Heterakidosis, 43.8% Capillariasis

Research in Tayloq, Ishtixon, Jomboy, and Pastdarg‘om Districts of Samarkand Region

In Tayloq district, samples were taken from 96 chickens from household farms. Of these samples, 35 were infected with Ascaridiosis (36.5%), 22 with Heterakidosis (22.9%), and 38 with Capillariasis (39.6%). In total, out of the 96 chickens examined, 44 showed nematode infections, resulting in an overall infection rate of 45.8% (Table 3).

Further research was conducted in Ishtixon district, where 82 chickens from household farms were examined. Out of the 82 chickens, fecal samples were taken and analyzed. In 63 of the samples (76.8%), eggs of nematodes such as Ascaridiosis, Heterakidosis, and Capillariasis were found. Specifically, 32 samples were infected with Ascaridiosis, 53 with Heterakidosis, and 34 with Capillariasis. The infection rates for these nematodes were 39.0%, 64.6%, and 41.5%, respectively.

In Jomboy district, fecal samples were taken from 44 chickens. Among the chickens tested, 21 showed nematode infections (47.7%), with the following breakdown: 19 chickens had Ascaridiosis (43.2%), 17 had Heterakidosis (38.6%), and 21 had Capillariasis (47.7%).

In Pastdarg‘om district, fecal samples were taken from 48 chickens, and the samples were analyzed using the Fulleborn method. The analysis showed that 23 chickens were infected with Ascaridiosis, 18 with Heterakidosis, and 21 with Capillariasis. The infection rates were 47.9% for Ascaridiosis, 37.5% for Heterakidosis, and 43.8% for Capillariasis. In total, 52.1% of the chickens in Pastdarg‘om district were infected with nematodes.

In Samarkand region, a total of 321 chickens were tested. Out of these, fecal samples were collected and analyzed. The results showed that 188 of the chickens (58.6%) were infected with nematodes. However, no infections of Singamos (a type of nematode) were detected, similar to other regions previously examined.

Table 4

Extent of Nematode Infections in Chickens in Jizzax, Sirdaryo, and Samarkand Regions Based on Helminthological and Coprological Examinations

Region	Number of Chickens Examined	Number of Infected Chickens	Infection Rate (%)	Main Nematodes	Ascaridiosis (%)	Heterakidosis (%)	Capillariosis (%)
Jizzax	167	70	41.9	Ascaridiosis, Heterakidosis, Capillariosis	32.80	32.66	37.08
Sirdaryo	259	131	50.6	Ascaridiosi	32.80	32.66	37.08

Region	Number of Chickens Examined	Number of Infected Chickens	Infection Rate (%)	Main Nematodes	Ascaridiosis (%)	Heterakidosis (%)	Capillariosis (%)
				s, Heterakidosis, Capillariosis			
Samarkand	188	110	58.57	Ascaridiosis, Heterakidosis, Capillariosis	32.80	32.66	37.08
Total	747	389	52.07	Ascaridiosis, Heterakidosis, Capillariosis	32.80	32.66	37.08

Nematode Infection Extensiveness in Chickens in Central Climate Zone Regions (2022-2024) From 2022 to 2024, fecal samples from a total of 747 chickens were examined using Fulleborn and sequential washing methods of helminthology in the central climate region provinces. According to the results of our studies, in Jizzax region, out of 167 chickens examined, 70

chickens were found to be infected with nematodes, with an infection rate of 41.9%. In Sirdaryo region, out of 259 chickens examined, 131 were infected with nematodes, and the infection rate was 50.6%. Furthermore, in Samarkand region, the rate of infection was the highest in the country, with 188 out of the examined chickens (58.57%) showing mixed nematode infections (Table 4).

In general, among the 747 chickens examined in the central geographical climate region, 389 chickens, or 52.07%, were found to be extensively infected with the main nematodes, including ascaridiosis (32.80%), heterakidosis (32.66%), and capillariosis (37.08%), according to the results of our research.

Let me know if you need anything else!

Countermeasures Against Parasitic Infections. To combat chicken helminthiasis, we used the effective nematodicidal preparation "Tetramizol 10%" in powder form. It is mixed with the chicken feed or drinking water and is administered at a dose of 200 mg per 1 kg of live body weight. The "Tetramizol 10%" anthelmintic preparation demonstrated a 92.86% effectiveness after a single dose and a 100% effectiveness when administered a second time.

Conclusions. It was found that of the 747 samples collected from households in the central regions of the Republic of Uzbekistan, specifically from Samarkand, Jizzax, and Kashkadarya regions, 386 samples were mixed-infected with helminths, indicating an invasion rate of 52.07%.

The effectiveness of the "Tetramizol 10%" anthelmintic preparation ranged from 92.86% to 100%, and it has been recommended to specialists in the field of production. Let me know if you need any further adjustments or additional details!

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