

SURVEY AND PREVALENCE OF LICE INFESTATION THE CHICKEN (*Gullas gallus domesticus*) IN KURDISTAN REGION-IRAQ

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ABSTRACT

Two hundred local chickens were examined outdoor for collecting chicken's chewing lice from October 2017 to July 2018. The study area comprised three main governorates (Duhok, Erbil, and Sulaymaniyah) with three areas were selected randomly for each governorate. Lice were collected by picking hand and no toothed thumb forceps used. Samples stored into tubes containing ethanol 96%, then samples examined and identified by using a dissecting microscope. In the present study, the infection of local chicken with one or more lice was 42% (84/200), six species of lice were recorded and identified to: *Menacanthus stramineus*, *Menopone gallinae*, *Goiocotes gallinae*, *Goniodes gigas*, *Goniodes dissimilis* and *Lipeurus caponus*.

KEYWORDS: *Gullas gallus domesticus*, Lice infestation, Chickens and Kurdistan Region/Iraq.

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1-INTRODUCTION

Poultry production is one of the economically important agricultural activities in most countries. Chicken (*Gallus gallus domesticus*) is considered the most important poultry species (Mutinelli, F. et. al. 2008). Poultry provides large nutritional value and other economic benefits (Al-Mayali, H. and Abdul Kadhim, H. 2015). Many parasites species may affect birds when they were breeding outdoor. Ectoparasites can be found practically in all birds. They feed on their body's blood, feathers, skin, scales, and responsible for transmitting parasite's stages to these chickens (Tamiru, F. et. al. 2014). Lice complete their entire life cycle upon the body surface of chickens (Clayton, D. H. and Johanson, K. P. 2003). They may cause a range of symptoms and effects on chickens including irritation, reduced egg production, loss of plumage, discomfort stunted growth and hatchability, increased feed costs, anemia, elevated mortality, and susceptibility to other infections (Mirzaeil, M. et. al. 2015). Chewing lice are obligate ectoparasites wingless living on host body, lice are clearly recognizable as insects since they have a segmented body divided into ahead, thorax and abdomen. They have three pairs of jointed legs and a pair of short antennae. such as Ischnocerans lice, causing damage to feathers, in

addition to the effect on their hosts (Pape, A. and Rozsa, L. 2005). Lice had provided that cause poor health especially harmful to young birds when a large number of lice may cause them to sleep (Al Badrani, M. and Al Saed, A. 2014). Skin lesions leading them to bacterial infections (Mishra, S. et.al. 2017). There are no differences between the male and female for infection (Al-Waaly A. B. M. and Jasim D. N. (2017). Lice are excellent organisms for such studies because they are relatively host-species and spend entire their life cycle on the host (Zarith, M. et.al. 2017). The aims of this study are to estimate the prevalence and determined different species of lice infested- chickens and their backyard in the Kurdistan Region-Iraq.

Morphology of chewing Lice

Lice are clearly recognizable as insects since they have a segmented body divided into ahead, thorax and abdomen (Smart, 1943). They have three pairs of jointed legs and a pair of short antennae. All lice are dorsoventrally flattened and wingless, the sensory organs are poorly developed; the eyes are vestigial or absent. Adult Mallophaga (Amblycera and Ischnocera) are usually about 2-3 mm in length. They have large, rounded heads on which the eyes are reduced or absent; in Amblycera the four segmented antennae are protected in antennal grooves, so that only the last segment is visible, in the Ischnocera the antennae are three to five

segmented and are not hidden in grooves, at least the first two segments of the thorax are usually visible Soulsby, E. J. L. (1982).

2- MATERIAL AND METHOD

Study Area

Two hundred local chickens were examined for the existence of lice on their bodies. All samples were collected from October 2017 to July 2018 outdoor. The study area comprised of three main governorates (Duhok, Erbil, and Sulaymaniyah), with three areas for each governorate randomly.

Collection And Preservation Samples

The examination of chicken bodies included wings, feathers, ventral and femoral areas (body) and anus had done by using naked eyes and hand lens to collect lice (Clayton, D. H., and Tomkins, D. M. 2003). Lice were collected by handpicking no toothed thumb forceps or hairbrush had used then transferred to a petri dish containing water, then the samples stored into tubes containing ethanol 96% (Kansal, G. and Singh, H. S. 2014).

Identification Of Samples

The samples (lice) had taken to the Department of Biology lab.; College of Science; Univ. of Duhok for study their morphological characteristics according to the modern keys by using a dissecting microscope (Soulsby, E. J. L. 1982).

3-RESULTS

Two hundred chickens were examined. All samples were collected from October 2017 to July 2018 outdoor. 84 were infected and 116 were uninfected and the presence of infection was 42% (Table 1). The percentage of infected chicken was 20.5% (41/200), 14% (28/200) and 7.5% (15/200) in Duhok, Erbil, and Sulimaniah respectively in (Table 2). Six species of lice were recorded on the chickens as the following: *Menacanthus stramineus*, see figure (1) *Menopon gallinae* figure (2), *Goniocotes gallinae* figure (3), *Goniodes gigas* figure (4), *lipeurus caponius* figure (5), *Goniodes dissimilis* figure (6). The number of individual lice in this study was 386 from 200 chickens and the prevalence was 1.93 (Table 3).

Table (1): The percentage of infected of chickens test period in Kurdistan region Iraq

| Type | # Examined Chickens | # Infected Chickens | % |
|------------------|---------------------|---------------------|----|
| Locally Chickens | 200 | 84 | 42 |

Table (2): Show the prevalence of lice species in local chickens in Kurdistan Region / Iraq

| Host | Governorates | #Examined chickens | #Infested chickens | Prevalence (%) |
|----------|--------------|--------------------|--------------------|----------------|
| Chickens | Duhok | 65 | 41 | 20.5 |
| | Erbil | 70 | 28 | 14 |
| | Sulaymaniyah | 65 | 15 | 7.5 |
| Total | | 200 | 84 | 42 |

Table (3): Prevalence of Lice species in local chickens of some areas in Kurdistan region / Iraq

| Study location | # Examined chickens | # of lice | Relative Prevalence (%) |
|-----------------|---------------------|-----------|-------------------------|
| Duhok city | 22 | 143 | 6.5 |
| Zakho | 22 | 41 | 1.8 |
| Akra | 21 | 51 | 2.4 |
| Erbil city | 24 | 38 | 1.5 |
| Shaqlawa | 24 | 20 | 0.8 |
| Koya | 22 | 70 | 3.1 |
| Sulimaniah city | 22 | 14 | 0.6 |
| Rania | 22 | 7 | 0.3 |
| Dokan | 21 | 2 | 0.09 |
| Total | 200 | 386 | 1.93 |

The examination of chicken bodies included wings, feathers, ventral and femoral areas (body) and anus, the total number of individual lice in each body parts was 50, 45, 127 and 164 respectively show (Table 4).

Table (4): Show the isolation of difference lice species from local chickens body

| Host | Lice species | Site | | | |
|----------|-------------------------------|------|------|----------|------|
| | | Wing | Body | Feathers | Anus |
| Chickens | <i>Menacanthus stramineus</i> | | + | | + |
| | <i>Menapon gallinae</i> | | | + | + |
| | <i>Goniocotes gallinae</i> | | + | | + |
| | <i>Goniodes gigas</i> | | | + | |
| | <i>Goniodes dissimilis</i> | | + | | |
| | <i>Lipeurus capoins</i> | + | | | |
| | Total | 50 | 127 | 45 | 164 |

One of the signs seen in these birds irritation, reduced egg production, loss of plumage, discomfort stunted growth and hatchability, increased feed costs and anemia. Especially in the case single infestation of lice in chicken was different in governorates of Kurdistan region (Duhok, Erbil and Sulaymaniyah) was 24, 13 and 13 in respectively see (Table 5). And the mixed infestations of lice on local chickens included two species and three species of lice in the one host in (Duhok, Erbil and Sulaymaniyah) were 17, 9 and 2 infected chickens respectively see (Table 6).

Table (5): The (single infestations) of lice on local chickens.

| Host | Parasitic infestation | Governorates | # of chickens affected |
|----------|-----------------------|--------------|------------------------|
| Chickens | Single infestation | Duhok | 24 |
| | | Erbil | 13 |
| | | Sulaymaniyah | 13 |

Table (6): The (mixed infestations) of lice on local chickens

| Host | Parasitic infestation | Governorates | Two species of lice | Three species of lice | # of chickens affected |
|----------|-----------------------|--------------|---------------------|-----------------------|------------------------|
| Chickens | Mixed infestation | Duhok | 13 | 4 | 17 |
| | | Erbil | 7 | 2 | 9 |
| | | Sulaymaniyah | 2 | | 2 |



Fig. (1): Lice *Menacanthus stramineus* under a dissecting microscope (4X).



Fig. (2): Lice *Menopon gallinae* under a dissecting microscope (4X).



Fig. (3): Lice *Goniocotes gallinae* under a dissecting microscope (4X).



Fig. (4): Lice *Goniocotes gigas* under a dissecting microscope (4X).



Fig. (5): Lice *Lipeurus caponis* under a dissecting microscope (4X).



Fig. (6): Lice *Goniodes dissimilis* under a dissecting microscope (4X).

5-DISCUSSION

In this study, six species of lice have been identified, including: *Menacanthus stramineus*, *Menopone gallinae*, *Lipeurus caponius*, *Goniocotes gallinae*, *Goniodes gigas* and *Goniodes dissimilis*. according to morphological characteristics in Soulsby. The percentage of chicken lice in the present study was 42% (84/200) compare with other studies, As well the rate of infection in Duhok was bigger than from other governorates because the lack of hygiene in these villages. This study agreed with study of Nigeria which showed that 41% of chickens were infected with ectoparasites lice (Nnadi, P. A. and George, S. O. 2010), and in the Czech Republic (2008) was (30%) of chickens were infected with seven species of lice *Goniocotes gallinae*, *Menopon gallinae*, *Menacanthus stramineus*, *Lipeurus caponis*, *Menacanthus cornutus*, *Cuclotogaster heterographus* and *Goniocotes microthorax* (Sychra, O. et. al. 2008), while the present study is disagreement with Thi-Qar, about (22.36%) of infected bird's lice (Awad, A. and Mohammad, Z. 2015). And Alemu, in (2015) were recorded the prevalence of three lice species *Menacanthus stramineus*, *Menopon gallinae* and *Cuclotogaster heterographa* at 87,68% in Bishoftu Town, Ethiopia (Alemu, N. et.al. 2015). Further, 81.36% (48/59) were recorded with lice (*Menacanthus stramineus*, *Goniocotes gallinae*, *Menopon gallinae*, *Goniodes gigas*, *Goniodes dissimilis* and *Lipeurus caponius*) in Sulaymaniyah Region Iraq (Abdullah, S. and Mohammed, A. 2012), the reason for the difference between this study and the study of Sulaymaniyah in Abdullah, S. and Mohammed, A. (2012). Attributed to many factors of which the environmental different, Increasing awareness of poultry farmers and Attention to hygiene in the Kurdistan region of Iraq year after year.

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