PREVALENCE OF ECTOPARASITE IN INDIGENOUS CHICKEN FARM AT, AL-JABAL AL-GHARBY , LIBYA.

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ABSTRACT

Ectoparasites are organisms which live on the skin of the host are a common parasitic disease posing a serious problem in birds. During September to October 2017, a total of 195 specimens from indigenous chicken were collected from different areas in Al Jabal Al Ghrbi (Om-Algersan, Alqula, Yafrien), which located in the north west of Libya. All specimenswere microscopically examined. The Prevalence of ectoparasitesinfestation was observed in 97 out of 195 chickens, giving the overall prevalence of 49.74%. In this study, ectoparasiteswas higher in male chicken (63.33%) than the female (50.99%) with odds ratio of 1.24times(P= 0.05). Also the results revealed high prevalence of ectoparasitesinfection in young chicken (66.18%) than in adult chicken(52.22%) with odds ratio of 1.26 times. The finding in this present study showed that, 43.59 % lice, 23.5% tick and lice &tick (double infection) 17.9% respectively. The study result showed that tow genus liceand tick and tow species of ectoparasites, Menacanthus stramineus (lice) and Argas persieus (tick) were identified from the infested birds. It was concluded that ectoparasitesinfestationwas high prevalence in indigenous chicken. So to control the spread of ectoparasitesinfection integrated strategies should be taken. Moreover, further investigation is needed to improve the management practice and to avoid ectoparasitesinfection in poultry in Libya.

Keywords: indigenous chicken, prevalence, ectoparasites, Al Jabal Al Gharbi, Libya.

1. INTRODUCTION

Ectoparasites are organisms which live on the skin or part of the skin of the host for different times, affects all kind of animals (Hopla, 1982). Ectoparasites attack poultry by either sucking blood or feeding on the skin or feathers.It is causing irritation, discomfort, weak,restless, tissue damage, blood loss leading to anemia, toxicosis, allergies and dermatitis, which in turn reduce quality and quantities of meat and egg production seriuously

(Edgar et al., 1958; Bala et al., 2011; Hobbenaghi et al., 2012; Desoky et al., 2015; Zeryehun and Yohannes, 2015).

Furthermore, some of ectoparasite species (ticks and mites) act as mechanical or biological vectors of pathogens transmit number of poultry diseases, such as pasteurellosis, fowl pox, Newcastle disease, and in some cases, Chlamydia

(Hopla et al., 1994; Nnadi and George, 2010). Different types of ectoparasites cause higher infestations in many kinds of animals including livestock, pets, laboratory animals, poultry, fish and bees (Marshall, 1981; Hopla, 1982).

Mekuria, and Gezahegn (2010), found four genus (lice, flea, mite and tick) and six species of ectoparasites recovered in back yard and none in intensive production system they were 88% lice, 16.5% flea, 8.1% mite and 9.2% tick. Traditional Poor hygienic system raises prevalence of ectoparasites in backyard chicken. Radfar et al. (2010), found three fauna species of ectoparasites in free rangebackyard chickens in the Sistan region, Southeast Iran,the prevalence was discovered in the chicken, Argas persicus (16.94%),Menopen gallinae (55.93%), and Menacanthus stramineus (33.89%).While, The indigenous chicken were infected with four fauna species of parasites including, lice, flea, ticks and mites in Potiskum area in Nigeria (Lawal et al.,2017).parasite diseases occurs high mortality of backyard chicken and a serious threat to food security and livelihood of many rural families in Northern Nigeria (Musa et al., 2008).

Due to lack of information about the prevalence of parasite disease in indigenous chicken in Libya, the purposes of the present investigation was to estimate the prevalence of ectoparasitesin indigenous chicken in Al Jabal Al Gharb (Om-Algersan, Alqula, yafrien), Libya.

2. STATISTICAL ANALYSIS

The data were statistically evaluated by using one way analysis of variance (ANOVA), using SPSS (Version 15) software, the level of significance was set at $p<0.05$ and chi-square test to determine the relation ofectoparasitesinfection in pigeon with adult and young. Post Hoc test was used to compare the relation ofectoparasitesinfection between male, female and nestling; $p<0.05$ was considered as statistically significant

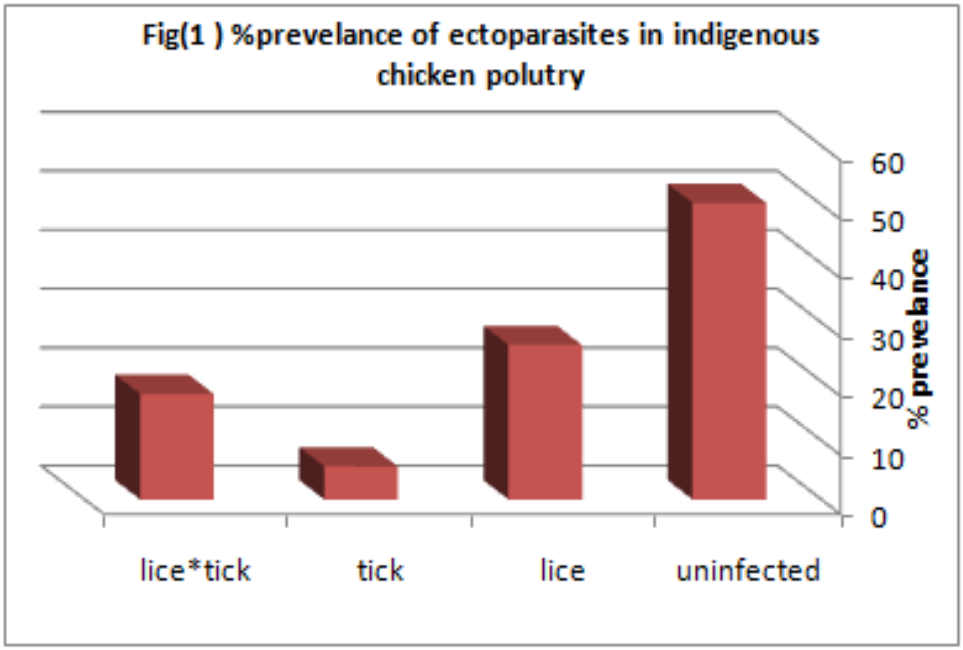
3. MATERIAL AND METHODS

The present study was carried out from September to October 2017 in different area of Al Jabal Al Gharbi (Om-Algersan, alqula, Yafrien) located in the north west of Libya. A total of 195 specimensfrom domestic backyard chicken were collected from household farms. Specimens were randomly selected to be examined for the presence or absence of ectoparasites.

After the clinical examination of all chicken ectoparasites collected from different parts of the body of the chicken, around the wing, head, vent, feather, feet, leg, wattle, and comb recorded. Specimenspreserved in chloroform solution prepared in 10 % formalin and taken to laboratory for parasitologica identification based on the morphological features described by Soulsby (1982).

4. RESULT

In this primary study 195 indigenouschicken were clinical examined from different age groups. As noted, the over all of infection rate of ectoparasitesspecies was 49.74% (97/195) cases (Fig. 1).



The result showed in figure (1), that the highest overall prevalence rate of ectoparsite was 45.59 % lice (single infection), 23.50% tick (single infection)and 17.9% lice &tick (double infection) respectively.

TABLE 1: PREVALENCE OF ECTOPARASITE INFECTION IN RELATED TO GENDER AND AGE IN INDIGENOUS CHICKEN

Sex	chicken examined (number)	Negative Number (N)	present (%)	Positive Number (N)	present (%)	P value
Male	30 *	11/30	36.67%	19/30	63.34%	P<0.05
Female	153*	75/153	49.01%	78/153	50.98%	
Nestling(unknown <30 days)	12*	12/12	100%	0/12	0 %	
Age	**chicken examined**	**Negative Number**	**present**	**Positive Number (N)**	**present (%)**	**P value**
Adult	115 [a]	63/115	47.78%	52	45.21%	0.00
young	68 [b d]	23/68	33.82%	45	66.17%	
Nestling(unknown <30 days)	12 [a]	12/12	100%	0	0 %	
Total	195	98/195	50.26%	97/195	49.74%	

- *An asterisk (*) indicates a significant difference between male, femaleand nestlinggroup of animals.*
- *Different letters indicates a significant difference between Adult ,young and nestling group of animals.*

As shown in table (1), the overall prevalence, 153 (50.98%) of the examined female chickens were found to be infested with different species of ectoparasites. While, the highest infestation was reported in male indigenous chickens by (63.34%). The infestation was significantly higher inmale than in female chicken and nestling.The table(1) shows significant mean differences between the three groups which is clear from the results: F = 2.644, dF = 2, P<0.05. Post Hoc shows that there is a difference between the Female , male and nestling poultry.

In the present study ,the overall ectoparasite prevalence was revealed in table (1), indicates that young chicken had received the highest infestation (66.17%), and followed by adult chicken (45.21%). p<0.00.The results in the table(1)demonstrate significant mean differences between the three groups which is clear: F = 6.571, dF = 2, P<0.05. Post Hoc shows that there is a difference between the adult , young and nestling poultry. These are clear from the 95% confidence intervals.

TABLE 2: PREVALENCE OF SINGLE OR DOUBLE POSITIVE INFECTION IN RELATED TO AGE AND GENDER (IN THE SAME ANIMAL) IN INDIGENOUS CHICKEN.

Sex &age	chicken examined (number)	Negative		Positive infestation chicken						p value
		Number	present	Lice(single)		Tick(single)		lice -tick(double)		
				N	%	N	%	N	%	
Male	30 *	11/30	36.67%	5/30	16.7	2/30	6.67	12/30	40	0.05
Female	153*	75/153	49.01%	46/153	30.06	9/153	5.89	23/153	15.03	
Nestling(unknown <30 days)(	12*	12/12	100%	0	0%	0	0%	0	0%	
total	195	98	50.26^{a}	51/195	26.15	11/195	5.64^{ab}	35/195	6.82^{ab}	
Adult	115 c	63/115	47.78%	40/115	34 78	4	3.47	8	6.95	0. 05
young	68^{b}	23/68	33.82%	11/68	16.17	7	10.29	27	39.70	
Nestling(unknown <30 (days)	12^{ad}	12/12	100%	0	0%	0	0%	0	0%	
total	195	98	50.26^{a}	51/195	26.15^{bc}	11/195	5.64^{ace}	23/153	15.03^{ade}	

- *An asterisk (*) indicates a significant difference between male, femaleand nestling group of animals.* **. p value< 0.05**
- *Different letters indicates a significant difference between single and double infection group of animals*. **p value< 0.05**

The rate of infection which was registered in female and male, (30.06%,16.70 %) lice (single) infection, (15.03%, 40%) lice-thick and

(5.89%,6.67 %) tick, respectively, while our study did not report any infestation by ectoparasite in nestling group (Table 2).

The prevalence of ectoparasiteaccording to the age, the rate infestationwas detected in adult and young indigenous chicken as follow, lice (34.78%,16.17%),tick (3.47%,10.29%), lice-tick (6.95%,39.70) respectively (Table 2). The data shows a significant association between the age and the state, $P < 0.05$ (Table 2).

5. DISCUSSION

poultry are considered as one of the most important sources of protein and egg production for people throughout the world wide (Ensminger, 1992; Radfar et al. 2012). poultry might be infested by many species of ectoparasites such as, flies, lice, mite, and ticks. they cause damage feathers and irritate and skin lesions, which occur reducing in performance of adult chicken and direct destruction to young chicken(Arends,2003).

Ectoparasites cause damage plumage, irritation, discomfort, blood loss, toxicosis, allergies and dermatitis, in addition, decrease quality and quantity of meat and egg production (Ruff 1999).

In the present study an overall prevalence of ectoparasite infestation in backyard chicken was 49.74 % in ALGabal Algarbi, Libya. The overall prevalence ratio of ectoparasite in indigenous chicken was considerably higher, which indicates that ectoparasite infestation is a common problem in this area. This finding was in agreement with that reported from Iran with 52.8% (Mirzaei et al.2015). The rate of infestation with ectoparasite

slightly lower than that showed in previous studies 95.8% in Kenya (Sabuni et al. 2010) and 88.4% in China (Wang, et al. 2010), while it was higher than that observed in Nigeria (41%) (Nnadi and George, 2010) and in Ethiopia (2.6%) (Tolossa and Tafesse, 2013).

These variations in the prevalence may be due to several factors such as climate conditions, geographical difference, seasonal variation, resistance of the host, different feeding habits, age of birds, and difference in environmental housing conditions.

Our study represents that prevalence of parasiteinfection varied in relation to gender. The infestation was significantly higher in male chicken. High rate of infection was recorded in male chicken (63.34%) comparing with female (50.99%). Also, the rooster were more susceptible (1.24 times) to parasitesinfection contrast with female (Table 1). These results were consistent with the study of Mungube et al. (2008), who reported a higher occurrence of ectoparasites infestation in roosters . However, discrepancy with work of (Mirzaei et al. 2015)and Bala et al.(2011), who reported a higher occurrence of ectoparasites infestation in chicken.

In this study, as shown in table (2), the result indicates that young chickens could be more susceptible to parasitic infestation compared with adult, The infestation was significantly higher in young chicken. High rate of infection was recorded in male chicken (68.18%) comparing with adult (52.22%). Also, the young were more susceptible (1.30 times) to parasitesinfection contrast with adult (Table 2). These results were similar with the study of Mirzaei et al. (2015), who reported a higher occurrence of

ectoparasites infestation in young (Mungube et al. 2008); our results are not in accordance with other researches in Zimbabwe (Permin et al. 2002), and Nigeria Biu et al. (2008), who reported that young chickens were more infested compared with young chicken.

The results of the present study indicate that the ectoparasit infection caused by Menacanthus stramineusand Argas persieus are in indigenous chicken in area of the study. The rate of the prevalence was clearly observed in young than in adult and in male than in female chicken. Integrated strategies should be taken to control the spread of ectoparasites infection in indigenous chicken. Also, the further investigationsare needed to improve the management practice and to avoid infection in poultry in Libya.

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