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Incidence of ectoparasites in indigenous fowls in and around Bhubaneswar, Odisha

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ABSTRACT

Bal, G.C., Panda, M.R., Mohanty, B.N. and Dehuri, M. 2016. Incidence of ectoparasites in indigenous fowls in and around Bhubaneswar, Odisha. *Indian Journal of Poultry Science*, 51(1): 113-115.

An epidemiological study was conducted for a period of one year to know the incidence of ectoparasitic infestation in indigenous fowls in and around Bhubaneswar area. The overall prevalence of ectoparasites in indigenous fowls examined was 100%. Among the ectoparasites, the predominant infestation was by lice (81%), followed by ticks 11%, mites (6%) and fleas (2%). Five species of lice, two species of mites, two species of ticks and one species of fleas were recorded. The incidence of lice *Menacanthus stramineus* was highest (92.41%) followed by *Goniocotes gallinae* (73%), *Lipeurus caponis* (71.73%), *Menopon gallinae* (68.78%) and *Goniodes gigas* (39.24%). There was report of hard tick *Haemaphysalis* species was 14.77% and that of soft tick, *Argas persicus* was 2.95%. The incidence of mite *Cnemidocoptes mutans* was 7.17%, and *Dermanyssus gallinae* 3.8%, where as the incidence of flea *Echidnophaga gallinae* was 2.10%. Lice were detected throughout the year, mites and soft ticks were mainly prevalent during winter season where as the flea and hard ticks were prevalent in the rainy season. The presence of hard tick *Haemaphysalis* species in wattles and combs of the indigenous fowls appears to be the first record of this tick in Odisha and perhaps in the country also.

Key words: Ectoparasites, Indigenous fowl, Lice, Mites fleas, Ticks

Raising of local poultry breeds in backyard is an important source of livelihood for the rural people of Odisha. It is important to promote backyard poultry towards household nutrition security and livelihood support but following concerted efforts must be made to improve backyard poultry and provide appropriate extension support on issues like disease prevention (Chaturvedani *et al.*, 2015). Free-ranging birds often have a greater chance of acquiring a more diverse parasite population (Lay *et al.*, 2011). External parasites affect the chickens by causing irritation, loss of weight, skin lesions that may be site of secondary infection, sucking blood, hence leading to anemia and death at times (Mullen and Durden, 2002) These parasites are common in free-range poultry systems since there is inappropriate housing and lack of appreciable pest control efforts (Mungube *et al.*, 2008).

The prevalence of ectoparasites is well documented in India (Saxena *et al.*, 2004; Chaddha *et al.*, 2005; Bindulakshmanan *et al.*, 2007; Bhat *et al.*, 2014). However information on the prevalence of ectoparasites in indigenous fowl in Odisha is scanty and therefore, the present study was conducted to record the species wise incidence of ectoparasites as well as prevalence of ectoparasites in different seasons.

A total of 237 numbers of indigenous fowls of different age and sex in and around Bhubaneswar were examined for a period of one year. The skin along with feathers, head cut from neck regions, legs cut from shank region were collected from the indigenous fowls soon after slaughter. The lice and hard ticks attached to the

comb and wattles, flea attached to the skin around the eye as well as soft ticks found on feathers of fowl and crawling on walls of poultry houses were picked up parting the feathers by hand and fine forceps and with a camel hair brush moistened with water and transferred to glass vial containing 70% alcohol. The birds suspected for mite infestation were collected by skin scrapings. The collected lice, mite, flea, ticks were further processed as per the standard procedures (Rathore and Sengar, 2005) and identified on the basis of their morphological characters as per Soulsby (1982). Statistical analysis were carried out by Statistical Package for Social Science (SPSS) using chi-square test.

The overall prevalence of ectoparasites in 237 indigenous fowls examined was 100%. Among the ectoparasites, the predominant infestation was by lice (81%) and other ectoparasites like ticks (both soft and hard ticks) 11%, mite (6%) and flea (2%). In all the birds examined multiple infestations was common. The higher incidence of ectoparasites in the present study agrees to findings in different parts of the world (Okaeme, 1988; Permin *et al.*, 2002; Shanta *et al.*, 2006; Swai *et al.*, 2010; Moyo *et al.*, 2015). About ten types of ectoparasites were recorded in our study that included five species of lice, two species of mites, two species of ticks and one species of flea. The incidence of lice *Menacanthus stramineus* was highest (92.41%) in the indigenous fowls followed by *Goniocotes gallinae* (73%), *Lipeurus caponis* (71.73%), *Menopon gallinae* (68.78%) and *Goniodes gigas* (39.24%). The incidence of hard ticks *Haemaphysalis* spp. was 14.77% and soft tick *Argas persicus* was 2.95%. The incidence of mite and flea were

Cnemidocoptes mutans (7.17%), *Dermanyssus gallinae* (3.8%) and *Echidnophaga gallinae* (2.10%) (Table 1).

All the 237 birds examined in the present study were infested with more than one species of ectoparasites particularly lice. In this investigation most of the birds were affected with lice infestation. The higher prevalence of lice in backyard poultry have been reported earlier by Goel et al., 2005; Salam et al., 2007; Rani et al., 2008; Bhat et al., 2014 from different parts of the country. The higher prevalence of *Menacanthus stramineus* in our findings has been earlier confirmed by Rezaei et al., in Iran; Alemu et al., 2015 in Ethiopia and Shanta et al., 2006 in Bangladesh while a higher prevalence of *Menopon gallinae* has been reported from Tamil Nadu (Rani et al., 2008) and Jammu (Bhat et al., 2014). The variation in the result could be due to different geographical areas and period of study that have different climatic conditions (temperature and humidity) which may alter the population dynamics of the parasites (Magwisha et al., 2002).

The incidence rate of hard tick (*Haemaphysalis* spp.) recovered in this investigation was 14.77%. Okaeme (1988) in Nigeria had recorded the occurrence of hard tick (*Amblyomma variegatum*) from local chicken, and Moyo et al., 2015 have also recorded presence of *Rhipicephalus sanguineus* from free ranging chickens of South Africa. Occurrence of *Haemaphysalis* spp. in

chicken is probably the first report in India. This could be due to free range chickens scavenge for food in grassy areas where the ticks mostly stay searching for the host. Also this type of tick attacks any warm blooded animal (Jacobs et al., 2001). The incidence of ectoparasites were higher during rainy season (87.00%) followed by winter (81.00%) and summer (73.00%) which corroborates with the findings of Chaddha et al., 2005 but differs to reports by Panda et al., 1992 and Bhat et al., 2014 where the incidence rate was higher in winter. The season wise variation was significant ($p < 0.05$) in case of *Lipeurus caponis*, *Goniocotes gallinae* and *Dermanyssus gallinae* (Table 2). The incidence rate of soft tick (*Argas persicus*) and mites were high in winter but not recorded during summer and rainy but the incidence rate of flea, *Echidnophaga gallinae* and hard tick (*Haemaphysalis* spp.) was high in rainy season. Reasonably, frequent changes in the climate with rise of temperature and heavy rainfall during the rainy months in this region favour the multiplication of ectoparasites and as a result maximum numbers of birds were infested with ectoparasites in rainy season.

The indigenous fowls are usually reared under free range system in rural areas and in slum in urban areas in a very unhygienic condition. The open yard systems of farming and night time housing in the ill-ventilated overcrowded pens are favourable for ectoparasitic infestations in indigenous fowls. In the present

Table 1: Incidence of ectoparasites infestation and location

Sl.No.	Name of Ectoparasites	No. of birds infected	Percentage of infection	Location
1.	<i>Menopon gallinae</i>	163	68.78	Feathers
2.	<i>Menacanthus stramineus</i>	219	92.41	Feathered area of breast, thighs, around anus
3.	<i>Lipeurus caponis</i>	170	71.73	Wing feathers
4.	<i>Goniodes gigas</i>	93	39.24	Body and feathers
5.	<i>Goniocotes gallinae</i>	173	73	Fluff region (base of feathers)
6.	<i>Cnemidocoptes mutans</i>	17	7.17	Leg
7.	<i>Dermanyssus gallinae</i>	9	3.8	Body
8.	<i>Echidnophaga gallinae</i>	5	2.10	Above the eyelid
9.	<i>Haemaphysalis</i> spp.	35	14.77	Wattle and comb
10.	<i>Argas persicus</i>	7	2.95	Body

Table 2: Seasonal variation of ectoparasitic infestation

Sl.No.	Ectoparasite recovered	% infection (Winter)	% infection (Summer)	% infection (Rainy)	P-value
1.	<i>Menopon gallinae</i>	76.81	62.79	68.29	0.17219
2.	<i>Menacanthus stramineus</i>	91.30	90.7	95.12	0.512015
3.	<i>Lipeurus caponis</i>	78.26	55.81	82.93	0.000178**
4.	<i>Goniodes gigas</i>	37.68	33.72	46.34	0.234163
5.	<i>Goniocotes gallinae</i>	60.87	79.07	76.83	0.025121*
6.	<i>Cnemidocoptes mutans</i>	11.59	5.81	4.88	0.233077
7.	<i>Haemaphysalis</i> spp.	-	11.62	30.48	-
8.	<i>Echidnophaga gallinae</i>	-	-	6.09	0.008006874
9.	<i>Dermanyssus gallinae</i>	13.04	-	-	-
10.	<i>Argas persicus</i>	10.14	-	-	0.0001**

*significant ($P < 0.05$) **highly significant ($P < 0.01$)

investigation the prevalence of different ectoparasites was recorded with a high prevalence. Besides, the soft tick such as *Argas persicus* and the hard tick as *Haemaphysalis* spp. have been recorded in fowls for the first time in the state.

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