



## SHORT COMMUNICATION

### Helminthosis of rural poultry in Quetta, Pakistan

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Received: 06.01.2013, Accepted: 18.02.2013

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#### Özet

**Faizullah, Ahmed S, Babar S, Fareed SK, Kakar MA, Ziaulhaq, Jan S.** Pakistan'nın Quetta bölgesi tavuklarında helmintiosis. *Eurasian J Vet Sci*, 2013, 29, 2, 103-105

Quetta bölgesinde 120 adet kırsal alan tavuğunda helmint parazitleri araştırıldı ve enfeksiyon oranı yaklaşık %75.8 olarak belirlendi. Prevalans kış mevsiminde (%81.6) yaz mevsiminden (%70) daha yüksek belirlendi. *Raillietina tetragona* (%48.3), *Choanotaenia* spp. (%20), *R. echinobothrida* (%19.2), *Cotugnia* spp. (%1.7) ve *R. cesticillus* (%0.8) olmak üzere beş farklı sesto türü belirlendi. Nematod olarak *Ascaridia galli* (%10.8), *Allodapa suctoria* (%0.8)'dan daha fazla belirlendi. İncelemede en fazla tek parazit enfeksiyon (%53.3) belirlenirken, iki, üç ve dördü enfeksiyon da (%20, 1.7 ve 0.8) belirlendi. Tavukların %5.8'inde nematod ve sestoyla miks enfeksiyon belirlendi. Sonuç olarak köy tavuğu yetiştiriciliğinde rutin olarak antelmintik uygulamalar yapılmalıdır.

**Anahtar kelimeler:** Helmint, kanatlı çiftliği, Pakistan

#### Abstract

**Faizullah, Ahmed S, Babar S, Fareed SK, Kakar MA, Ziaulhaq, Jan S.** Helminthosis of rural poultry in Quetta, Pakistan. *Eurasian J Vet Sci*, 2013, 29, 2, 103-105

Helminth parasites were studied in 120 rural chickens in Quetta, showing overall infection to be 75.8%. Prevalence was higher in winter (81.6%) than in summer (70%). Five cestodes were found, i.e., *Raillietina tetragona* (48.3%), followed by *Choanotaenia* spp. (20%), *R. echinobothrida* (19.2%), *Cotugnia* spp. (1.7%) and *R. cesticillus* (0.8%). The nematode, *Ascaridia galli* was more prevalent (10.8%) than *Allodapa suctoria* (0.8%). Infection of one host with single species of helminth was seen at most occasions (53.3%), followed by double, triple and quadruple infections (20, 1.7 and 0.8%), respectively. Mixed infection with both nematodes and cestodes was seen in 5.8% of chickens. In conclusion, anthelmintic treatments should be done routinely in the rural poultry.

**Keywords:** Helminth, rural poultry, Pakistan



Table 1. Percentage prevalence and average intensity of helminths.

Helminth species	Prevalence	Intensity
<i>Choanotaenia</i> spp.	20%	5.1
<i>Cotugnia</i> spp.	1.7%	1
<i>Raillietina cesticillus</i>	0.8%	1
<i>R. echinobothrida</i>	19.2%	6.2
<i>R. tetragona</i>	48.3%	23.7
<i>Allodapa suctoria</i>	0.8%	97
<i>Ascaridia galli</i>	10.8%	2.8
Overall helminthosis	75.8%	

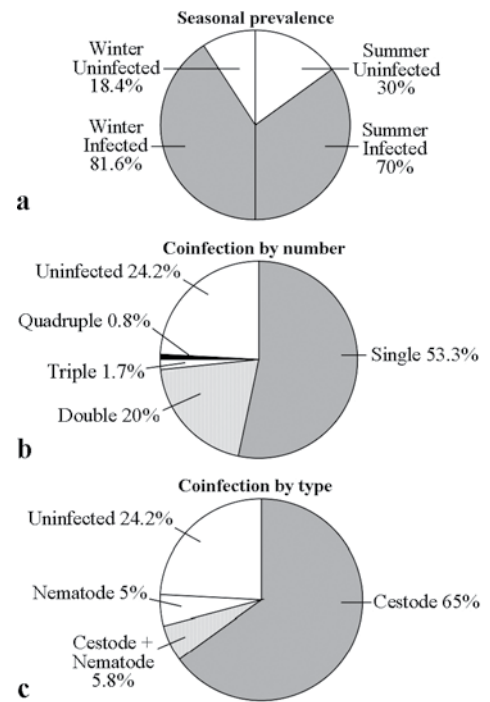


Figure 1. Seasonal prevalence and coinfection of helminths.

Rural poultry occupies significant position in everyday life of people in developing countries as Pakistan, while commercial poultry as, layers, broilers and their eggs contribute enormously to GDP (Farooq 2011-12). Yet, helminthosis causes serious threat to rural poultry production and performance (Phiri et al 2007).

The research was carried out to determine diversity and prevalence of poultry helminths in Quetta.

Quetta is the provincial capital, having harsh summer and winter, recording the lowest and highest range of temperature from  $-18^{\circ}\text{C}$  ( $-0.4^{\circ}\text{F}$ ) to  $42^{\circ}\text{C}$  ( $107.6^{\circ}\text{F}$ ). In summer, average temperature is  $25^{\circ}\text{C}$  ( $77^{\circ}\text{F}$ ), while in winter it is  $4^{\circ}\text{C}$  ( $39.2^{\circ}\text{F}$ ).

Gastrointestinal tracts of 120 rural chickens were collected from different localities in Quetta. Half the samples were collected in winter (Dec-Feb), while half in summer (Jun-Aug). Following the guidelines of Pritchard and Kruse (1981), cestodes were preserved in 70% ethyl alcohol or 10% formaline, stained with borax-carmin and mounted in Canada balsam, while nematodes were killed in ethyl alcohol, later adding equal amount of glycerol for body transparency. Nematodes were mounted on slides in pure glycerol, sealing the edges of cover glass with nail polish. Yet, in place of nail polish, we strongly recommend DPX due to its comparatively better adhesion, letting no leak to glycerol. Parasite species were identified from works of Abdou and Selim (1957), Anderson (2000), McDougald (2003) and Bilqees (2007).

Overall helminthosis was 75.8%, as 91 out of 120 rural chickens were infected with parasites. Five species of cestodes and two

species of nematodes were the causes of infection (Table 1). Among cestodes, three species belonging to the genus *Raillietina*, i.e., *R. cesticillus*, *R. echinobothrida* and *R. tetragona* were 0.8, 19.2 and 48.3% prevalent, while *Choanotaenia* spp. and *Cotugnia* spp. were 20 and 1.7% prevalent, respectively. Nematodes, as *Ascaridia galli* and *Allodapa suctoria* were 10.8 and 0.8% prevalent. Overall average worm burden/intensity was 1 for both *Cotugnia* spp. and *R. cesticillus* (Table 1). Among cestodes the highest average worm burden was that of *R. tetragona* (23.7). Worm burden of *A. suctoria* was higher (97) than *A. galli* (2.8). Parasites were found in 81.6 and 70% of chickens during winter and summer, respectively (Figure 1a). Among the infected hosts, 53.3% were infected with single species, while 20% were infected with two species of helminths. Coinfection with three and four parasites was found in 1.7 and 0.8% of instances, respectively (Figure 1b). Infection with cestodes only was observed in 65% of cases. Infection with nematodes only was seen in 5% of cases, while coinfection with nematodes and cestodes was seen in 5.8% of cases (Figure 1c).

We did not witness a number of poultry infecting species that have been previously reported in other parts of the country, as *Acuaria hamulosa*, *A. spiralis*, *Amoebotaenia sphenoides*, *Cotugnia margareta*, *Daviana proglotina*, *Heterakis carioca*, *H. gallinae*, *Hymenolepis cantaniana*, *Postharmostomum commutatum*, *Raillietina torquata* and *Syngamus trachea* (Maqbool et al 1998, Shah et al 1999, Tasawar et al 1999, Bilqees 2007). In Pakistan, the five helminth genera of our result are also found in hosts other than poultry, and they are represented by worms as, *Ascaridia qadrii*, *Choanotaenia gulbulae*, *C. gondwana*, *C. infundibulum*, *Cotugnia celebensis*, *C. karachiensis*, *C. cuneata*, *Raillietina flaccida*, *R. galeritae*, *R. nagpurensis* and *R. reynoldsi* (Bilqees





2007). The genus *Allodapa* was not listed in the same literature, yet the genus *Subulura* was presented, with members being *S. galloperdici*, *S. lamellata* and *S. minetti*. *Subulura suctoria* and *S. brumpti* are synonyms of *Allodapa suctoria* (Anderson 2000). Except *A. galli*, all the parasites in the study are biohelminth, requiring different intermediate hosts, as ants, beetles and other arthropods (Abdou and Selim 1957, McDougald 2003, Ahmed et al 2006). The higher worm burden of *A. suctoria*, compared with *A. galli* in the research is probably because the chicken may have pecked many infected beetles, at one place. Indeed, even a single beetle could harbor about fifty larvae of *A. suctoria* (Abdou and Selim 1957). Yet, since *A. galli* doesn't have intermediate host, its eggs reached many chickens in dispersed manner with low intensity, making higher prevalence, yet lower worm burden. The higher prevalence of parasites in winter than in summer is due to the extreme environment, which Quetta demonstrates, being very warm in summer and chilling cold in winter. Rural poultry feeds upon infected intermediate hosts of these parasites during late summer, hence larvae develop into adults in winter. Poultry owners also provide supplementary feed during winter, due to absence of vegetation, insects or worms, further reducing the risk of parasitic larvae. Extermination of intermediate hosts due to these limiting factors (cold weather and clean supplementary feed) shows its result in low prevalence of parasites, in coming summer season. Unavailability of infected intermediate hosts is the reason why low prevalence of parasites is seen in poultry reared under proper management systems, as compared with free roaming chickens (Maqbool et al 1998). The effect of cold weather might be different on viruses, bacteria and ectoparasites, since close association of birds for conservation of body heat during winter, enhances the proliferation of these types of diseases.

In conclusion, helminths cause serious threat to poultry health in Pakistan. Five species of cestodes and two species of nematodes were recorded in Quetta. High prevalence of parasites in winter than in summer, suggests that proper management of poultry could reduce parasitic prevalence. Cold weather acts as a mean of natural selection in host-parasite relation, while farm management acts as artificial selection for the same.

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