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Occurrence of *Argas persicus* infestation in poultry farms in and around Hyderabad, Telangana

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Abstract

A study was conducted in commercial layer farms located in and around Hyderabad to find the occurrence of *Argas persicus* infestation, approximately 3000 *Argas* ticks (712 larva, 2288 adults) were collected in commercial layer farms and examined. Morphological features of *Argas persicus* were identified by light microscopy^[1, 2]. The present study helps to identify the prevalence of *Argas persicus* infestation thereby preventing the infestation.

Keywords: light microscopy, *Argas persicus*, occurrence, Hyderabad

1. Introduction

Birds are infested with many ectoparasites viz., ticks, lice, mites, fleas and flies, all of which decrease the performance of host^[3, 4]. The fowl tick, *Argas persicus* affects domestic fowl, turkey, duck, pigeon and canaries. The nymphs and adults of *Argas persicus* are strikingly active at night, migrating long distances to find their host and hiding in an inactive condition during day time. *Argas persicus* causes weakness and anemia due to loss of blood, reduces egg yield and cause death of birds⁵, moreover, it causes paralysis in heavily infested chickens^[6, 7]. The total mortality rate in the *Argas persicus* (Oken) affected poultry house was 8.62% Jabalpur, India^[7]. The prevalence of ectoparasites in backyard poultry were studied in Jammu region during October 2010 to September 2011 with 3.38% *Argas persicus*^[8]. The tehsil wise prevalence was 8.2, 23.5 and 12.5% in Faisalabad, Samundri and Jaranwala of Pakistan, respectively⁵. The prevalence of *Argas persicus*, 35.95%; *Argas reflexus*, 0.97%; and *Ornithodoros lahorensis* 15.65% were reported⁹. The present study was described to know the occurrence of *Argas persicus* infestation in fowls and thereby following the control measures for *Argas persicus* infestation.

2. Materials and Methods

2.1. Collection of *Argas persicus*

Adult ticks and their larval and nymphal stages were collected from different poultry farms located at various places in Telangana and brought to the laboratory in zip lock bags with small holes for aeration. These ticks were found in the cracks, crevices, below the feed trough, inner side of feed trough, bird cages, litter and on birds.

2.2. Microscopic Examination

The engorged and unengorged ticks and their larval stages were kept in 10% potassium hydroxide (KOH) and boiled until the chitin was dissolved. Then the ticks were washed for 2-3 times to remove the excess KOH on the ticks. Then the ticks were dehydrated in 70% alcohol for 30 min, ticks were further subjected to dehydration in ascending grades of alcohol. i.e., in 90% alcohol for 20 minutes and absolute alcohol for 15 minutes, followed by clearing in lactophenol for 24 hours. Cleared ticks and their larva were mounted on a clean glass slide using Dibutyl Phthalate Xylene mountant and observed under light microscope at various magnifications.

3. Results and Discussion

Considerably good number of ticks were collected on the bird cages (Fig. 1), crevices (Fig. 2), below the feed trough (Fig.3), inner side of feed trough, poultry litter and birds (Fig. 4,5). These ticks were collected in ziplock bags with small holes for aeration survived till they reached laboratory.

3.1 Macroscopic Examination

The morphological characteristics of *Argas* sp. were studied initially by visual examination. Engorged ticks were slaty blue in colour (Fig.6) and un-engorged ticks were brown in colour (Fig.7). The adult tick was oval in shape, narrower anteriorly than posteriorly (Fig. 8). The edges of the body were sharp (Fig. 8). Mouth parts were situated on the ventral side (Fig. 9) in a camerostome [1, 2, 10, 11]. Eggs were brown in colour and spherical in shape (Fig. 10).

3.2 Light Microscopy

The ticks were examined under light microscope and were identified based on the morphological characters likemammillations on the dorsal surface of tick (Fig. 8). These findings were coincided [1]. Male *Argas persicus* was identified by the presence of semi-circular genital aperture (Fig. 9) where as in female it was horizontal in position (Fig. 11).These findings were similar [10]. Larva had three pairs of legs and mouthparts consisting of two palpi and hypostome were situated anteriorly (Fig. 12).The tarsus of each leg of larva had two claws with pulvillus (Fig. 13). These finding were coincided [12]. The present study was described the morphological identification of *Argas persicus* and to know the occurrence of infestation, then follow the control measures to reduce the mortality of infested birds.



Fig 1: Engorged *Argas persicus* tick on bird cage.



Fig 2: Engorged slaty-blue coloured *Argas persicus* ticks escaping into crevices.



Fig 3: Engorged *Argas persicus* tick hiding under the feed trough.



Fig 4: Engorged *Argas persicus* on the comb of bird. Arrow indicating the cyanotic discoloration of comb.



Fig 5: Nymphal stages of *Argas persicus*(arrow) at the base of the wing, indicating a zone of erythema (E).



Fig 6: Engorged slaty blue colour *Argas persicus* tick.



Fig 7: Un-engorged brown colour *Argas persicus* tick.



Fig 8: Dorsum of *Argas persicus* showing narrower anterior and broader posterior portion. Arrows indicating the mammillations.



Fig 9: Ventral view of adult male *Argas persicus* showing mouth parts (M), semi-circular genital aperture (G) and four pairs of legs (L).



Fig 10: *Argas persicus* tick laying eggs.



Fig 11: Ventral view of adult female *Argas persicus* showing mouth parts (M), horizontal slit like genital aperture (G) and four pairs of legs (L).



Fig 12: Larva of *Argas persicus* tick showing anteriorly situated mouthparts (MP) and three pairs of legs (L).



Fig 13: Larva of *Argas persicus* tick showing two palpi (P) and hypostome (H). Inset showing two claws (Cl) and pulvillus (Pv).

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