Lousicidal effect of deltamethrin in domestic pigeons

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Abstract Present study reports the effect of deltamethrin against louse infestation in domestic pigeons. In this study, twelve pigeons infested with *Columbicola columbae* louse were sprayed with deltamethrin (12.5 %) and another twelve pigeons were kept as control group. The lice intensity was reduced 89 %, 98 % and 100 % on 1st, 7th and 14th day of post treatment in treatment group. Out of twelve pigeons, four pigeons showed sneezing and temporary ocular inflammations after spraying.

Keywords *Columbicola* · Deltamethrin · Lice · Pigeons

Introduction

In recent years, domestic pigeons (*Columba livia domestica*) are associated with human habitations, often occupying the premises of people. Pigeons are infested with variety of parasites among lice are one of the important ectoparasites. Heavy lice infestations leads to changes in the birds' behavior drop in egg production and impaired immunity (Naz et al. 2010). Deltamethrin was used for treatment of different ectoparasitic infestations in animals (Reddy et al. 2014; Reddy and Sivajothi 2013). In India,

different therapeutic trails were carried out on louse infestation in poultry (Ponnudurai et al. 2011). But very little information was available on treatment of pigeon louse infestation. Hence, the aim of present work is to study the effect of deltamethrin against pigeon louse infestation.

Materials and methods

A pigeon flock consist of 62 pigeons was identified that they were suffering with severe louse infestation in Proddatur of Andhra Pradesh. All the pigeons had lowered growth rate, itching, damaged skin and feathers. Examination of feathers revealed presence of lice and these lice were collected for their identification (Fig. 1). Out of 62 pigeons 24 pigeons were selected for this study. In this 12 were selected for treatment and remaining 12 were kept as control study. Pretreatment lice intensity was determined by counting the number of lice on individual pigeon. After ascertaining the lice intensity, the first group was sprayed with deltamethrin (Butox, 12.5 % solution, 1 ml in 4 l of water) until they were completely wet. Care was taken for all the parts of the body having adequate contact with the insecticide solution. The second group was sprayed with distilled water and served as control group. Both the group of pigeons were inspected visually for the presence of lice on 1st, 7th and 14th day of post-treatments by close inspection. Treatment group of pigeons were observed daily for any abnormal signs and presence of skin irritations. The efficacy of drug was determined on the basis of reduction percentage of lice infestations (Khater et al. 2013). The reduction (%) of lice on pigeons was calculated according as the following equation: Lice reduction (%) = (Pre treatment count – Post treatment count)/Pre

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Fig. 1 Presence of lice infestation over the wings

Fig. 2 Microscopic view of *Columbicola columbae* (40X)

treatment count $\times 100$. The data collected were analyzed statistically with SPSS software.

Results and discussion

The lice species that were identified in this study is *Columbicola columbae* as per Soulsby (1982) (Fig. 2). In the first (treatment) group of pigeons, average number of lice count before therapy was 214.4 ± 7.9 . After treatment with deltamethrin this group had 24.11 ± 5.56 , 5.2 ± 1.8 and 0 count on the 1st, 7th and 14th day of post treatment observation. In the second (control) group of pigeons, average number of lice count before therapy was

208.3 ± 7.9 . After treatment with distilled water it had 216.65 ± 7.33 , 232.55 ± 7.43 and 230.86 ± 1.96 count on the 1st, 7th and 14th day of post treatment. The lice intensity was reduced to 89, 98 and 100 % in the treated group on 1st, 7th and 14th day post treatment, respectively, whereas it was reduced to zero in control group. A significant difference ($p > 0.01$) was observed in the reduction of louse count between treated and control group. Significant difference ($p > 0.01$) was also observed between before treatment and first day of treatment in treatment group. To prevent re infestation one more application was advised on the 21st day to control the lice originated from the eggs. According to the Ponnudurai et al. (2011) re infestation tends to occur in lice infestation after 15–20 days of treatment, because chemical insecticides are not effective against eggs of arthropods. In this study, coughing, sneezing, and temporary ocular inflammations were observed in four pigeons after spraying. It may be due to kerosene-like odor of deltamethrin and similar observations were reported previously (Khater et al. 2013).

In conclusion application of deltamethrin for treatment of louse infestation was effective to a flock of pigeons.

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