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**Full Length Research Paper****Isolation and characterization of *Avibacterium paragallinarum* from ornamental birds in Thrissur, Kerala****Priya, P.M.<sup>1</sup>, S.Vamshi Krishna<sup>2</sup>, Dineshkumar. V<sup>3</sup> and M. Mini<sup>4</sup>***Department of Veterinary Microbiology, College of Veterinary and Animal Sciences, Mannuthy, Thrissur – 680 651**Kerala Veterinary and Animal Sciences University, Pookode, Wayanad****Corresponding Author: Priya, P.M*****Abstract**

The present work has been undertaken to isolate and identify the etiological agent causing respiratory infections and death in a commercial flock of ornamental birds in Thrissur, Kerala. The birds were showing respiratory signs, decreased egg production followed by death in few days. The bacterial growth could be detected on blood agar and chocolate agar from the sinus fluid, tracheal exudate and nasal swab. The colonies appeared as small dew drop like on blood and chocolate agar. By cultural, morphological and biochemical tests, the organism was identified as *Avibacterium paragallinarum* (previously *Haemophilus paragallinarum*). Further, antibiogram study revealed that the organisms were sensitive to gentamicin, ceftriaxone, tobramycin, chloramphenicol and nitrofurantoin and were resistant to neomycin, sulfadiazine, tetracycline, enrofloxacin, metronidazole and ciprofloxacin. The sick birds were successfully treated with Gentamicin.

***Keywords:* Infectious coryza, *Avibacterium paragallinarum*, Ornamental birds, Thrissur****Introduction**

Infectious coryza, an acute respiratory disease of chickens is caused by *Avibacterium paragallinarum*. The disease results in severe economic losses in terms of decreased egg production and death (El-Sawah *et al.* 2012). A wide variety of birds are susceptible including ornamental birds. The frequent occurrence of the disease poses a great threat to the poultry industry. The identification of the agent at the initial stage of the disease would be of great help to reduce the severity of the infection (Akthar, 2001). This paper documents the outbreak of the disease in a commercial flock of ornamental birds and the diagnosis and successful treatment of the sick birds in Thrissur, Kerala.

**Materials and Methods**

A disease was reported in a commercial flock of nearly 30 ornamental birds in Thrissur, Kerala. Half of the the birds were showing respiratory signs, decreased egg production followed by death in few days. On examination of sick birds, facial edema and mucous nasal discharge were noticed. The post mortem examination of dead birds revealed hemorrhages and frothy fluid in the trachea, hepatitis, splenomegaly and pulmonary congestion. Sinus fluid, tracheal exudate and nasal swabs were collected from four dead birds and were streaked on Blood agar, Chocolate agar and MacConkey agar and the plates were incubated at 37° C for 24 -48 hours. Biochemical tests like Indole, Methyl Red, Voges-proskauer, Citrate, Oxidase, Catalase and sugar fermentation tests were carried out, to identify the isolate as per the method described

(Barrow and Felthom, 1993). Further, antibiogram was done with 12 different antibiotics as per the method described (Bauer *et al.*, 1966).

**Results**

Small dew drop like colonies were detected on Blood and Chocolate agar after 24 hours of incubation and no growth could be observed on MacConkey agar. The colonies on Blood agar were non hemolytic. Grams staining of the organisms revealed Gram negative, non motile coccobacilli. The organisms were found to be catalase negative, oxidase negative, H<sub>2</sub>S negative, reduced nitrate and ferment glucose, lactose, sucrose and mannitol but not galactose. Based on the morphology, cultural and biochemical characteristics the organism was identified as *Avibacterium paragallinarum*. Further, antibiogram revealed that the isolates were sensitive to Gentamicin, Amoxycillin and all the sick birds in the flock were successfully treated with Gentamicin.

**Table 1.**Antibiogram of the isolates

Antibiotic	Result
Amoxycillin	+++
Chloramphenicol	++
Ciprofloxacin	---
Ceftriaxone	++
Enrofloxacin	---
Gentamicin	+++
Metronidazole	---
Nitrofurantoin	++
Neomycin	---
Sulphadiazine	---
Tetracycline	---
Tobramycin	++

Sensitive = + ; Resistant = --- ;

### Discussion

*Avibacterium paragallinarum* previously known as *Haemophilus paragallinarum* is the causative agent of infectious coryza, an upper respiratory tract infection of chicken resulting in severe economic losses (Blackall et al. 2005). The clinical signs of facial edema, mucous nasal discharge and sudden drop in egg production in the flock are indicative of infectious coryza. The growth of the organism on Blood and Chocolate agar and morphology, cultural and biochemical characteristics confirms the bacteria as *Avibacterium paragallinarum*. Similar findings were reported by Chen et al.(1993), Quinn et al.(1994), Keslerk (1997), Chukiatsiri et al.(2010) and Akthar et al.(2001) for identification. The organism was found to be sensitive to Gentamicin, Amoxycillin, Chloramphenicol, Tobramycin, Neomycin and all the sick birds were successfully treated with Gentamicin. This was in accordance with Akthar et al.(2001). *Avibacterium paragallinarum* is known to have three serovars A,B and C as per Page scheme (Page, 1962). As the disease often occurs as an outbreak proper serosurveillance has to be carried out to identify the locally prevalent serotypes and vaccination has to be carried out to prevent economic losses.

### Conclusion

This study forms the first confirmed occurrence of infectious coryza with heavy mortality. It also warrants a detailed investigation to identify the prevalent serotypes and development of vaccination.

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