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## New record of cestodes in ducks from Assam, India with histopathological study

**K Roy, PC Sarmah, SC Phukan and S Islam**

**Abstract**

The present study was conducted to find out the incidence of different helminths in ducks in Assam, India. A total of 108 duck carcasses were collected and internal organs were examined at laboratory. Out of 108 ducks examined, 50 ducks were found positive for different cestode parasites with the incidence rate of 46.29%. Amongst these 50 positive ducks, only in 2 ducks, one new cestode species was recovered which was identified as *Apora* sp. These parasites were recovered after removal of the cornified layer of gizzard which have not yet recorded from this country from any birds. The percentage of incidence was found to be 4.00% with a total of 45 numbers of parasites recovered. Histopathological study of the affected gizzard revealed multiple longitudinal and cross-sections of the parasites in the sub-keratinized area in cystic cavities.

**Keywords:** Duck, gizzard, cestode, histopathology

**1. Introduction**

Domestic ducks play a major role in rural economy in the form of meat and egg [7]. India has a total duck population of 23.5 million [1] concentrating mainly in the eastern, north-eastern and southern states of the country with 8.6 million in north-eastern region. Duck rearing is very popular among people of Assam and plays a major role in the rural economy. Geographical location, subtropical climatic condition with high rainfall, humidity, availability of marshy and water logging areas of Assam are suitable for duck habitat but these factor also favour growth, multiplication, development, survival and propagation of parasites in ducks [2]. Due to their foraging habit on insects, aquatic snails, earthworms, small fishes and other materials present in aquatic and grassy lands, which act as intermediate hosts of wide variety of cestodes and trematodes, ducks get infected with these parasites very frequently. During the present investigation, a new cestode parasite was recovered from gizzard of birds which has not yet recorded from this country from any birds.

**2. Materials and methods****2.1. Parasitological examination**

A total of 108 duck carcasses were examined at laboratory to study the incidence of different endo parasites. Samples were collected from different places of Kamrup district, Darrang district and Dhubri district of Lower Assam. Each organ was carefully removed and examined. The intestine was cut into several pieces and examined. The cornified layer of gizzard was removed and the muscular portion examined carefully. The contents beneath the horny layers of gizzard were collected in a glass petry dish and examined carefully under a Stereoscopic Binocular Microscope for presence of any microscopic parasites. The cestodes recovered under the cornified layer of gizzard were washed carefully in normal saline solution, then routinely processed, stained with Borax Carmine and permanent mounts were made as per the method described by Cable [3]. Study of the morphological characters including micrometry was carried out in all the stained specimens for identification at least up to generic level as per the keys and descriptions provided by Yamaguti [8, 9].

**2.2. Histopathological examination:**

A piece of affected gizzard of about one centimetre area surrounding the visible scolex of the worm was cut and fixed in 10% formol saline. After proper fixation, the tissue sections were cut and stained by routine Haematoxylin and Eosin method as described by Luna [6].

### 3. Result

From the present study, one species of cestode was recorded which is considered as the first record from India based on available literature. The recorded species was identified as *Apora* sp., which was recovered beneath the horny layers of gizzard. Out of 108 duck carcasses examined, 50 were found positive for different cestode parasites with an incidence rate of 46.29%. Among the 50 ducks positive for cestode parasites only 2 ducks were found to be infected with *Apora* sp. with an incidence rate of 4.00%. The mean number of cestodes recovered per duck was  $22.50 \pm 8.50$ . Morphological descriptions of these worms were as follows:

Very small worms measuring 6.00-8.50 mm in length and 0.210-0.220 mm in width (Fig. 1). Scolex bulbous with four elongate narrow suckorial grooves and absence of suckers. The rostellum was armed with a crown of 10 hooks measuring 0.042 mm in length and enclosed in a comparatively large rostellar sac (Fig. 2). The strobila was cylindrical and thicker posteriorly with a longitudinal groove on one side and without external segmentations. Testes were follicular and arranged in a semi circle in cross section and surrounded by the follicular ovary.

### 4. Pathological Changes

#### 4.1. Macroscopic

Grossly, after removal of the horny layer of gizzard, the affected tissue showed necrosis and sloughing at some places with formation of reddish brown friable mass in which numerous worms were embedded.

#### 4.2. Microscopic

Histopathological study of serially cut-stained sections of the affected gizzard revealed multiple longitudinal and cross-sections of the parasites in the sub-keratinized area in cystic cavities (Fig. 3). The surrounding areas showed desquamation and necrotic changes without any cellular infiltration.

### 5. Discussion

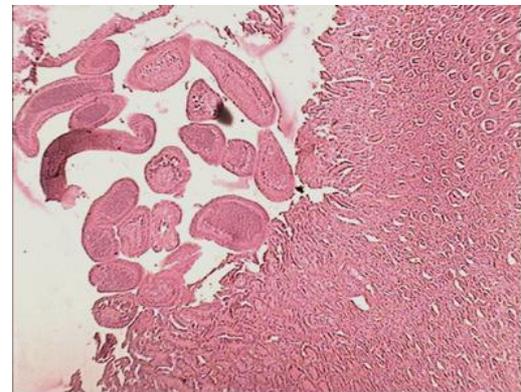
The present study revealed the incidence of *Apora* sp. in the gizzard of ducks and this forms a new record from India. The location of the parasite in the host and its morphological features coincided with the descriptions given by Yamaguti [9]. Ginezinskaya [4] also reported similar finding from Austrakan. However, Lone *et al.* [5] recovered a cestode parasite from beneath the horny layer of gizzard and identified as juvenile *Hymenolepis* sp. The *Apora* sp. recovered in the present study is distinct from *Hymenolepis* sp. reported by Lone *et al.* [5] on the ground that it lacked suckers on the scolex and external body segmentations.



**Fig 1:** Photo micrograph of a whole *Apora* sp.  
X 7.25



**Fig 2:** Photomicrograph of *Apora* sp. (anterior portion) showing the scolex with an armed rostellum in a rostellar sac



**Fig 3:** Photomicrograph of histopathological section of gizzard showing longitudinal & cross sections of *Apora* sp. HXE X100

### 6. Conclusion

In the present study one new cestode parasite was found and identified up to generic level as *Apora* sp. which has not yet reported from India till date. For identification upto the species level may require more detailed study.

### 7. Acknowledgement

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