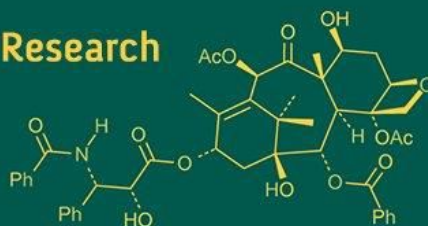


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Therapeutic management of ascariasis in a poultry farm: A case report

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Abstract

The present case report was conducted to describe the clinical presentation, diagnosis, and therapeutic management of ascariasis in a poultry farm caused by *Ascaridia galli*. The primary objective was to identify the parasitic infection and evaluate an effective treatment protocol to control its spread within the flock. The study was carried out on a flock of 50 BV300 birds reared under a deep litter system at a college poultry farm in Nagaland. Clinical signs such as droopiness, anorexia, weakness, and soiled vent were observed in an affected bird, which subsequently died. Post-mortem examination revealed the presence of roundworms in the intestine, and microscopic analysis confirmed the parasite as *Ascaridia galli*.

Following diagnosis, the remaining birds were treated with piperazine citrate administered through drinking water at a dose of 440 mg/litre for two consecutive days. Supportive therapy using vitamin and mineral supplementation was provided for seven days. The flock was monitored for 14 days along with strict biosecurity measures. No further clinical signs or mortality were observed during the observation period, indicating successful control of the infection.

The study concludes that early diagnosis, prompt treatment with appropriate anthelmintics, and implementation of good management and biosecurity practices are crucial for effective control of ascariasis in poultry, thereby minimizing economic losses and improving flock health.

Keywords: Ascariasis, *Ascaridia galli*, poultry, piperazine citrate, anthelmintic therapy

Introduction

Ascaridia galli is a roundworm classified under the Phylum Nematoda, Class Chromadorea, Order Ascaridida, and Family Ascaridiidae (Tarbiat, 2018) [8, 9]. It is characterised by a long, cylindrical body with sexual dimorphism. Male *Ascaridia galli* are smaller measuring 50-76 mm in length and have a curved tail while females range from 72-116 mm and appear straight. The mouth of this nematodes have three lips—one dorsal and two subventral and the oesophagus without a posterior bulb (Bhatia *et al.* 2024) [1]. The life cycle of *Ascaridia galli* is a direct with only one host. In the life cycle, sexually developed adult worms live in the small intestine of the host, where they lay eggs. The eggs then excreted through faeces. (Shohana *et al.*, 2023) [4] The eggs are oval in shaped with three protected layers namely the vitelline membrane the inner permeable layer, a thick protective layer and a thin albuminous layer (Perry and Wharton, 2011) [7] which prevents the egg from desiccation thereby maintains for extended period of time. *Ascaridia galli* develop larvae within them rather than hatching outside in the environment. These larvae continue to moult until they reach the third larval stage (L3), which is the infective stage. The development of egg into the infectious (L3) stage takes around 11 to 12 days (Tarbiat *et al.*, 2018) [8, 9]. The primary route of transmission for *Ascaridia galli* is the consumption of contaminated feed and water. The clinical signs and symptoms in poultry involve anorexia, droopiness, anaemia, weakness, ruffled feathers, decreased in egg production in layer, diarrhoea, soiled vent, and loss of body weight (Brar *et al.*, 2016) [2]. Early diagnosis can control the morbidity rate. Faecal examination by floatation technique, post-mortem examination in the small intestine of death bird. ELISA technique by Oladosu *et al.* (2022) [5]. Loop-mediated isothermal amplification assay in association with a lateral flow dipstick (LAMP-LFD) test for identification of internal transcribed spacer (ITS-2) that aids in the visual detection of *A. galli* eggs in faecal samples. (Panich *et al.* (2023) [6].

Ascaridia galli can be treated with piperazine dissolve in water or by mixing with feeds. Others anthelmintics like Phenothiazine, mebendazole and tetramisole etc can treat *A. galli*. Providing a combination of anthelmintic drug monthly, good managemental practices and proper biosecurity measurement can help to control the infestation in poultry. This report describes the detailed clinical, investigative, confirmatory and therapeutic management of *Ascaridia* in chicken at Nagaland.

Clinical History, Observations and Diagnosis

In a stock of 50 BV300 birds reared under the deep litter system at the College Poultry Farm, a female bird exhibiting droopiness, loss of appetite, soiled vent, and weakness was observed. After being isolated for a few days, the bird passed away, and a post-mortem examination was subsequently conducted. No abnormal lesions were detected in the visceral organs. However, upon incision of the intestine, a roundworm-like morphology was observed. Suspecting it to be a nematode species, the specimen was preserved in formalin solution and sent to the Department of Veterinary Parasitology for morphological examination and species identification. Under microscopic examination, the parasite was identified as *Ascaridia galli* as depicted in Fig.1.



Fig 1: *Ascaridia galli*

Treatment and Discussion

Upon confirmation of the worm species, the remaining unaffected birds were administered piperazine citrate orally at a dose of 440 mg per liter of drinking water for 24 hours for 2 days. On the third day of treatment, a vitamin and mineral supplement (Ambiplex suspension) was administered in the drinking water for 7 days to the flock.

All the birds were then closely monitored for 14 days for any abnormal signs or symptoms, along with the strict implementation of biosecurity practices on the farm. During the observation period, all birds remained normal and did not show any adverse signs or symptoms.

A similar treatment was reported by Rahul *et al.* (2023) [3], which successfully relieved *Ascaridia* infection in a flock. Early detection and isolation of affected birds can help protect the rest of the flock.

Conclusion

Poultry farming is a fast-growing industry; however, despite its promising growth, many poultry farmers have limited knowledge about parasitic problems. If these infections are not detected at an early stage, there is a high risk of economic losses, particularly for low-income farmers. To

overcome these challenges effectively, poultry farmers must possess adequate knowledge of common parasitic infections and the factors that lead to parasitic infestations. Therefore, early detection, prevention, and control of parasitic infections are essential to reduce the mortality rate in birds.

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