

## Popular Article

### Herbal and chemical treatment of *Ascaridia galli* in commercial poultry farm

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#### Introduction

Parasitism with protozoa, helminthes and arthropods remains a main threat for poultry industry worldwide. Between helminthes, like Roundworms, Tapeworms and Flukes, Nematodes are the most important ones. *Ascaridia galli*, *Heterakis gallinarum* and *Capillaria spp.* are the most common roundworms of poultry, with *Ascaridia galli* being the most prevalent round worm that live in the intestines of birds. Several studies report incidences of up to 90% in various countries. It is much more abundant in traditional farming with outdoor run than in industrial production facilities. This parasite is responsible for clinical and subclinical parasitism. In heavily infected poultry the clinical signs include droopiness, diarrhea and hemorrhages due to heavy worm infection, particularly in chickens and turkeys. Also, during heavy infestation birds may show signs of decreased weight gain and retarded growth, due to damaged integrity of the intestinal mucosa and subsequent impaired nutrient utilization. In more severe cases and especially in young birds, intestinal blockage may occur, leading to death. *A. galli* infections result in serious economic losses, usually associated with treatment cost, decreased feed efficiency and poor egg and meat production. Another very debilitating factor resulting in economic losses is the ability of *A. galli* eggs to act as vectors for transmission of fatal bacterial infectious organisms, such as *Salmonella* and *E. coli*. Currently many anthelmintic used for control of *A. galli* infection in poultry farm but due to high cost and resistance against parasites nowadays attention has been drawn to the use of botanicals in poultry diet, due to their anthelmintic properties.

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## **Life cycle and transmission**

The life cycle of *A. galli* is direct. From the small intestine, adult female worms pass eggs in the faeces. Infectious larvae develop inside the eggs in around 12 days at 33°C, but frequently take longer at lower temperatures. Infectious eggs can survive for up to a year in the litter of birds. They do not withstand at temperature below 12°C, but they may withstand a little frost. Earthworms are mechanical vectors that can eat vast volumes of infective eggs. Birds become infected after consuming infective eggs, either directly through contaminated food or water or indirectly through infected earthworms. The larvae are released in the stomach lumen after being ingested, where they moult and stay for around 10 days. They then penetrate the stomach lining, where they stay for 1 to 7 weeks until moulting. They then return to the lumen of the gut, where they mature into adult worms and the females begin to lay eggs.

## **Susceptibility and pathogenicity**

Infections with *Ascaridia* are particularly dangerous to young chickens under the age of 1 to 3 months, especially if they have a vitamin or protein shortage. In poultry husbandry, heavy illness is the leading cause of weight loss and decreased egg production. Intestinal obstruction can occur as a result of severe illnesses. Unscrupulousness, wing drooping, head bleaching, and emaciation are all visible. Infection also results in blood loss, lower blood sugar levels, higher uric acid levels, shrinking thymus glands, stunted growth, and a higher mortality rate. Adult worms may travel up the oviduct and be found in hens' eggs, as well as in the birds' faeces, in cases of severe illness.

## **Clinical sign and symptoms**

Marked lesions are produced when large number of young parasites penetrate into duodenal mucosa may cause severe haemorrhagic enteritis. Birds become anaemic and suffer from diarrhoea. Affected birds become unthrifty, markedly emaciated and egg production is decreased. In heavy infection, intestinal obstruction may occur. The color of egg yolk become pale. As birds get older, they become more resistant to the worms, which limits both the injury and the worms' reproduction, i.e., the contamination of their surroundings with eggs. Resistant is a breed-specific trait. Dietary deficiencies such as vitamin A, B and B12, various minerals and proteins leads to heavy infection.

## **Diagnosis**

*A. galli* can be diagnosed by the above clinical signs, faecal examination or worms in the intestine at post-mortem. Evidence of enteritis/haemorrhagic enteritis can be seen on PM.

## Prevention and control

- For sustainable control of *A. galli* different approaches have been employed such as, nutrition of poultry, utilization of genetic resistance, biological control, and the use of plants with promising anthelmintic activity.
- General hygiene requirements must be followed, including dry and disinfected flooring, clean feed and water, and separate upbringing of young, growing, and adult birds. Provide clean feeding troughs and drinking water appliances. Because the development of the worm's eggs requires humidity, it is advisable to keep the birds' bedding as dry as possible and to change it frequently to prevent or at least reduce *Ascaridia* infections.
- To avoid or limit egg contamination, strict sanitation of feeders and drinkers is required. It's also a good idea to rotate your pastures. Parasitic infections should be screened on a regular basis, and all infected birds should be separated and treated properly.

**Table 1. Common medicinal plants used for against *A. galli* in poultry**

S.N.	Plant	Part use	Dose (mg/kg)	Route	Effect against <i>A. galli</i>
1	<i>Azadirachta indica</i> (Neem)	Leaves powder	200	Orally	Increased bird body weight; Parasite death
2	Pomegranate ( <i>Punica granatum</i> )	Peel powder	1500	Orally	Fecal egg reduction, Increased packed cell volume, total serum proteins, body weight
3	Kadak patti ( <i>Vernonia Amygdalina</i> )	Leaves powder	100	Orally	Fecal egg reduction
4	Latakaaranj. Malayalam ( <i>Caesalpinia crista</i> )	Seed powder	50	Orally	Fecal egg reduction
5	<i>Piliostigma foveolatum</i> (Dalzell)	Bark	200	Orally	Fecal egg reduction
6	<i>Melia Azedarach</i> (Bakain)	Fruit powder	20	Orally	Egg development inhibition

**Table 2. Common anthelmintic drugs used for against *A. gall* in poultry**

S.N.	Drug	Dose	Route
1	Piperazine	Single dose, 50 mg/bird (less than 6 weeks old), 100 mg/bird (more than 6 weeks old), in the feed at 0.2% - 0.4% or in the drinking water at 0.1% - 0.2%	Orally
2	Hygromycin - B	8-12 g/tons of feed for 8 weeks	Orally
3	Albendazole	5-10 mg/kg	Orally direct by syringe (Not soluble in water)
4	Fenbendazole	14.5 g/ton of feed	Orally
5	Pyrantel tartrate	15-25 mg/kg	Orally