



## MYCOTIC DISEASES AFFECTING POULTRY BIRDS AND STRATEGIES FOR PREVENTION AND CONTROL: A BRIEF REVIEW

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### ABSTRACT

The mycotic diseases infecting the poultry cause immense economic loss. The diseases cause acute and/or chronic infections in poultry birds by the production of mycotoxins. The present review compiles the essential information on the point popular diseases of poultry with recommendations and strategies for prevention and control for necessary follow up by the poultry breeders and farmers.

**Keywords:** Economical importance, Fungus, Mycotoxins, Poultry birds

### INTRODUCTION

The release of mycotoxins in poultry infections lead to immunosuppression in the infected poults and chicken. Many fungal diseases affecting the chicken are of zoonotic importance and cause alarming morbidity and mortality in the affected poultry flocks.

#### Candidiasis<sup>1, 4-6, 8</sup>

Synonyms: Moniliasis, Thrush

This is a systemic mycotic disease of poultry birds affecting the alimentary tract of chicken and turkeys. It is caused by the yeast *Candida albicans*. The disease also infects pigeons, guinea fowls and ducklings. Young birds are more susceptible to the disease. Debilitating conditions and unhygienic surroundings are the predisposing conditions for the growth and spread of this yeast.

#### Clinical signs and symptoms

Avian moniliasis affects the upper alimentary canal and the crop in particular. The affected birds show stunted growth listlessness and loss of feathers. The characteristic lesions are found on the crop lining. In acute cases, the lesions are grayish-white in color, loosely adherent to the mucous membrane and resemble yellowish-white necrotic material. There is formation of ulcers in esophagus and mouth. The mucosa may also show hemorrhagic lesions.

#### Diagnosis

Diagnosis is made by examination of clinical specimens, isolation of the yeast on Sabouraud's dextrose agar, histopathological findings and by experimental animal inoculation technique. Microscopic examination of a digested smear (heated in 10% potassium hydroxide) helps to demonstrate the hyphal forms of the yeast in the affected tissues.

#### Prevention and control:

The infected birds should be fed with grains treated with methylene blue. Nystatin @ 10-100 mg/kg of feed controls the growth of *C. albicans*.

#### Treatment:

Nystatin can also be used a prophylactic measure @ 250-1000 mg per litre of water. Application of amphotericin-B or 1% iodine is also effective.

#### Histoplasmosis<sup>2, 5, 6</sup>

The litter in the poultry houses may remain contaminated with *H. capsulatum* along with the dust and dirt. The bird manure provides nutrition source for the growth of *H. capsulatum* already present in soil.

#### Aspergillosis<sup>3-7, 9</sup>

Synonym: Brooder's pneumonia.

Aspergillosis is a granulomatous and necrotizing disease of poultry birds which affects the lungs. It causes high morbidity and mortality in brooder chicks. The etiology involved is known as *Aspergillus fumigatus* which invades the orbit and paranasal sinuses of the birds. In cutaneous lesions, sometimes, *A. niger* and *A. glaucus* may also be encountered.

#### Transmission:

The birds contract the disease through contaminated feed and litter. They are prolific spore formers under wide range of environmental conditions. The spores of the fungus remain present in air, hay and straw. The disease spreads under suitable ambient temperature and humidity.

#### Clinical forms and symptoms:

The disease occurs in acute and chronic forms. In acute form, aspergillosis causes heavy morbidity and mortality with considerable economic losses. This form of the disease is

referred to as Brooder's pneumonia. There is decreased appetite, increased respiration, listlessness, foetid diarrhea and rapid loss of condition. Convulsions also occur in affected birds.

In chronic form the course of the disease is prolonged and the condition of the birds generally declines gradually. There is anaemia, yellowing of faeces and respiratory rattles.

#### Diagnosis:

Isolation of *Aspergillus spp.* can be made from clinical specimens in Sabouraud's dextrose agar containing chloramphenicol. The colonies of the fungus grow rapidly and are flat in appearance. The appearance of characteristic nodular lesions on the affected viscera is also of diagnostic importance. The infected material can be taken from the nodule in a drop of 20% potassium hydroxide solution followed by staining with lactophenol cotton blue stain.

#### Prevention and control:

Prevention of aspergillosis can be achieved by the removal of potential sources of contamination from poultry houses. The prophylactic use of 5-fluorocytosine inhibits germination of inhaled spores.

#### Vaccines:

Several types of vaccines are used involving different parts of the fungal element i.e. whole cell filtrate, spores, mycelia fragments and germling cells.

#### Treatment:

The avian antifungal agent used against aspergillosis is amphotericin B. 2,5-Fluorocytosine is used orally and is fungistatic and inhibits spore germination. Ketokonazole also proves to an effective therapy. The use of 5 week dose of therapeutic aspergillus mycotin vaccination is also useful for the treatment of this disease<sup>10-12</sup>.

## CONCLUSION

Control and prevention strategies should be judiciously employed by the poultry farmers in the form of strict biosecurity measures, hygienic feed provision with supplementation of probiotics and prebiotics to poultry birds to avoid the menace of mycoses in poultry.

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