Isolation and Identification of Fungi from Poultry Feed

M. B. Mehrolia, S. A. Kalkar and S. D. Bhiwagade
Department of Botany, Institute of Science, Nagpur-440001(M.S.), India.
surekhakalkar@gmail.com

Abstract

Poultry feed were collected from Kamptee market. Samples were analysed for fungi by culture method. Potato Dextrose Agar (PDA) and Sabouraud Dextrose Agar media were used to culture fungi. *Aspergillus spp.*, *Cladosporium*, *Pleospora*, *Periconia*, *Penicillium spp.*, and *Mucor* were among predominant forms recorded from poultry feed.

Keywords: poultry feed, PDA, Sabouraud's Agar, fungi, contamination

Introduction:

Quality livestock feed is necessary for the maintenance of physiological functions and animal defence systems against diseases and parasites. Traditionally, feed quality has been specified on basis of the nutritional value of every individual feed component (Fink-Gremmels, 2004). Agriculture commodities like cereals, cereal byproducts, oilseed meals etc are the major ingredients of poultry and livestock feed ingredients. Forages and cereals are often contaminated by fungi in the field, or during processing, transportation and storage when conditions such as temperature and relative humidity are favourable. Temperature and relative humidity of above 30°C and 80-100% respectively are favourable for fungal growth (Blaha *et al.,* 1990). Other conditions include nutrient availability (Njobeh, 2003) and oxygen supply (Filtenborg *et al.,* 2000). Most of the fungi invade only a minor fraction of feed particles with appropriate condition for their growth. Some of the contaminating fungi grow in the ripening crops in the fields hence, termed as field fungi while others propagate in the agricultural commodities during storage conditions and are called storage fungi. Contamination of agricultural commodities by fungi results not only the in downgrading but toxigenic fungi also develop a health hazard for human, livestock and poultry birds (Anderson and Thrane, 2006).The relatively high intake of cereal material in the diet of poultry may have adverse effects on animal health and on productivity when mycotoxin-contaminated feeds are consumed (Dalcero *et.al.*, 1997). The main goal of this study therefore, was to investigate mycoflora in poultry feed mixtures used in chicken breeding and assesses the common contaminants hazardous to poultry.

Material and Methods:

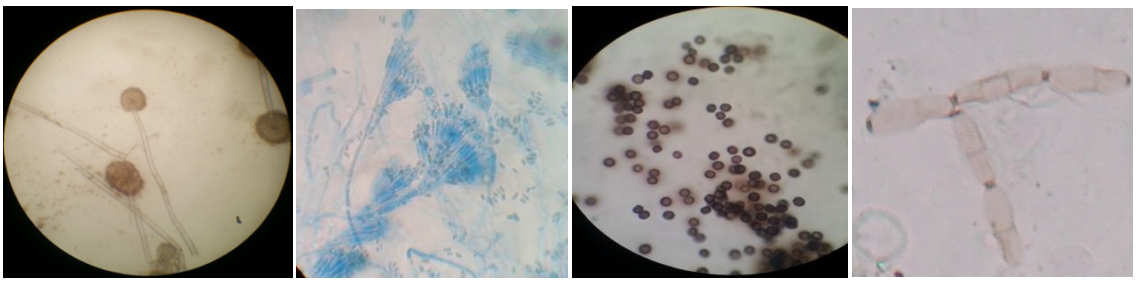
The study was carried out in Department of Botany, Institute of Science, Nagpur, during the winter season in months of December 2014 to February 2015. The two growth media used for the study were Sabouraud Dextrose Agar (SDA) and Potato Dextrose Agar (PDA). Media were prepared according to standard methods and thereafter sterilized by autoclaving at 121°C for 15 minutes at 15 pounds per square inch using autoclave. They were allowed to cool to 45°C on the laminar air flow before plating out into the various petri dishes at 15-20 ml following standard laboratory procedure. The dishes were inoculated with 1gm of feed raw material

samples in each petri plates incubated at room temperature for 5 days at the end of which they were examined for fungal growth.After isolation, the individual species were identified qualitatively by using standard literature (Barnett, 1960; Tilak, 1989).

Result and Discussion:

Three different poultry feed samples were analysed qualitatively for fungal flora for the winter season from the month of December 2014 to February 2015. In this survey fungi were isolated as the natural contaminant from both commercial and private feeds from the Kamptee market, Nagpur by culturing it in two culture media viz. PDA and SDA. The fungi viz. *Aspergillus spp., Cladosporium, Pleospora, Periconia, Penicillium spp., and Mucor* were among predominant forms recorded from all the samples of poultry feed (Fig. 1). It supports the findings of Makun *et al.* (2010) and Atehnkeng *et. al.* (2008) as the contaminant of cereal crops which are the ingredient used in poultry feed production. *Aspergillus* has been shown to be predominant in cereals and other ingredients used in producing poultry feeds in the tropics as in the case of Nigeria (Pitt & Hocking, 1997; Makun*et al.*, 2009). *Aspergillus* and *Penicillium* which were frequently isolated are the commonest and widespread in nature, and have been shown as fungal contamination of African foods and feeds (Atehnkeng *et al.*, 2008; Essono *et al.*, 2009; Njobeh *et al.*, 2009; Makun *et al.*, 2010). In Algerian wheat samples high levels *Aspergillus* (66 to 84%) were isolated followed by *Penicillium, Fusarium, Alternaria* and *Mucor* (Riba*et al.,* 2008). High contamination level of *Aspergilli* might be due to their high temperature tolerance character (Battilani *et al.,* 2003), which might also be responsible for the high frequency of *Aspergillus* in poultry feeds in Pakistan.The present study has thus provided information about the fungi contaminating the poultry feed.

(a) (b) (c) (d)



(e) (f) (g) (h)

a) Poultry feed, b) Culture plate sample A, c) Culture plate sample B, d) *Aspergillus spp.* e) *Aspergillus Spp.* f) *Penicillium spp.* g) *Periconia* h) *Cladosporium*

Figure. 1- Isolated and Identified fungi from poultry feed.

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