



MYCOFLORA WITH TOXIC POTENTIAL IN POULTRY FEED

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Abstract: The contamination of animal feeds, with fungi that could secret mycotoxin is one of the major threats to human and animal health. In this study are presented the results obtained after feed samples from poultry were evaluated regarding the fungal load. The proportion of fungi in the genus *Aspergillus* was significantly higher compared to those in the genus *Penicillium* and *Fusarium*. Given the important role in the production of mycotoxins, some of species of the genus *Aspergillus* have been isolated and morphologically identified. The highest relative density was shown by *A. fumigatus* (33.3%), followed by *A. flavus* (24.8%). Among the isolated *Aspergillus* species, highest frequency was observed in *A. fumigatus* (91.6%), followed by *A. niger* (83.3%). The level of fungi infestation and the identified species represent important parameters that reflect the quality of the feed studied as well as of the future potential for the presence of mycotoxins.

•Introduction

It is well known that fungi have not only a negative impact on nutritional and organoleptic properties of the feed but also can synthesize different mycotoxins [6]. The contamination of animal feed with mycotoxins could produce morbidity and mortality among animals and could induce health problems in human. Most toxic species belong to the genera *Aspergillus*, *Penicillium*, *Fusarium*. Foods and feeds especially in warm climates are susceptible to invasion by aflatoxigenic *Aspergillus* species and the subsequent production of aflatoxins during preharvesting, processing, transportation, or storage. *Aspergillus* species are known to produce a broad spectrum of mycotoxins including aflatoxins, sterigmatocystin and ochratoxins, which are causative agents of several carcinogenic, hepatogenic, nephrogenic, and immunosuppressive effects. For this reasons was considered to investigate toxigenic fungi load of poultry feed.

•Material and method

•For this study were analysed 12 samples of poultry feed used in individual breeding locations. The total fungi load from each sample was determined using the method of tenfold serial dilution. One gram of each powdered sample was mixed aseptically in 9 ml of sterile distilled water and shaken vigorously and after that the dilutions were prepared. From each dilution 1 ml was inoculated in two Petri plates and potato dextrose agar was added and the content was mixed. The inoculated Petri plates were incubated at 25±2°C, for 7 day. All plates were daily examined visually and under a compound light microscope for preliminary identification of fungal genera. The identified genera were then sub-cultured on potato dextrose agar for species isolation and identification. Macroscopic and microscopic identification of fungal species was done on the basis of cultural and morphological characteristics. Macroscopic features like colony color, texture and margins, as well as microscopic such as presence and type of conidia and conidiophores and their arrangements were examined for species differentiation using the catalogs description.

•Results and discussions

Fungal load (cfu/g) obtained in 12 poultry feed samples on the potato dextrose agar and the mycological quality was determined. According to Gimeno (12) samples can be qualified as good (count range < 3.10⁴ cfu/g), regular (count range 3.10⁴–7.10⁴ cfu/g), and bad (>7.10⁴ cfu/g). In our study fungal load of the analyzed samples varied from 10² to 10⁶ CFU/g. According to the mycological quality criterion 58.3% (7/12) samples could be qualified as good, 25 % (3/12) as regular, and 16.6% (2/12) as bad. The predominant genus in all samples was *Aspergillus*. The highest relative density was shown by *A. fumigatus* (33.3%), followed by *A. flavus* (24.8%) and *A. niger* (19.7%). The lowest relative density was recorded in case of *A. brasiliense* (15.1 %) and *A. orizae* (2.27%). Among the isolated *Aspergillus* species, highest frequency was observed in *A. fumigatus* (91.6%), followed by *A. niger* (83.3%) and *A. flavus* (75.0%), while it was 16.6% in *A. orizae*, and 41.6 % *A. brasilienses*, respectively.

Specie	Relative density		Relative frequency	
	N		X= 12	
<i>A.fumigatus</i>	55	33.3	11	91.6
<i>A.flavus</i>	41	24.8	9	75.0
<i>A.niger</i>	32	19.7	10	83.3
<i>A.brasiliensis</i>	25	15.1	5	41.6
<i>A.orizae</i>	12	7.3	2	16.6

•Conclusions

The level of fungi infestation represent an important parameters that reflect the quality of the studied Feed.

The identified species in poultry feed samples represent a major concern for possible aflatoxins contamination.