FUNGI DISTRIBUTION IN POULTRY FEED

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Introduction

Feed can easily be contaminated and colonized by fungi that use up the nutrients for their own metabolism and growth, producing secondary metabolites such as mycotoxins that are not eliminated throughout the feed processing [1].

The major problems associated with mycotoxin contaminated animal feed are metabolic disturbances resulting in poor animal productivity [1]. In addition, handling contaminated animal feed can also raise health issues regarding workers exposure to fungi and mycotoxins [2].

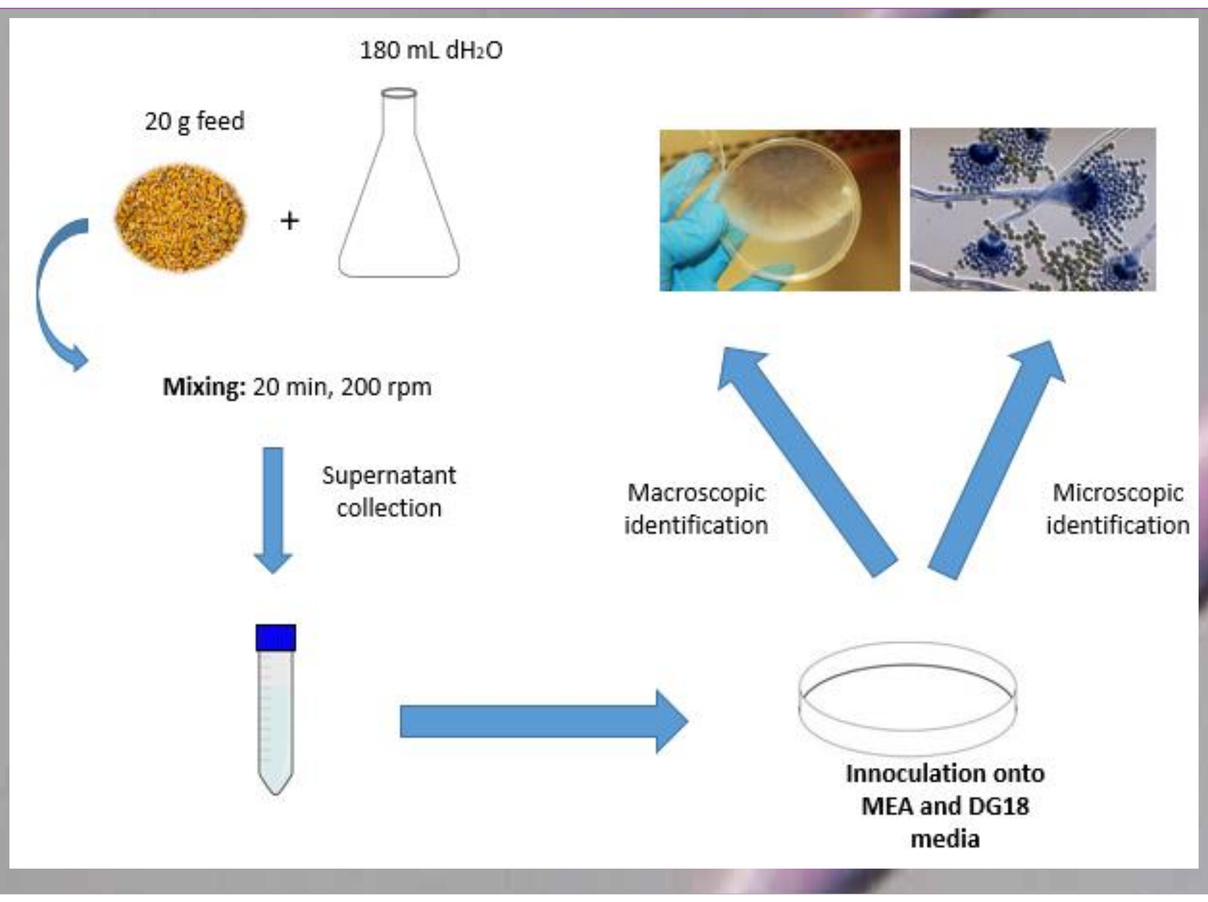
Aim of study

The scope of this work was to characterize fungal distribution in eleven poultry feed samples.

Materials and Methods

Twenty grams of feed were suspended in 180 mL of distilled water and homogenized during 20 minutes at 200 rpm. The washed supernatant was plated in malt extract agar (MEA) and dichloran glycerol agar base (DG18) media for morphological identification of the mycobiota present.

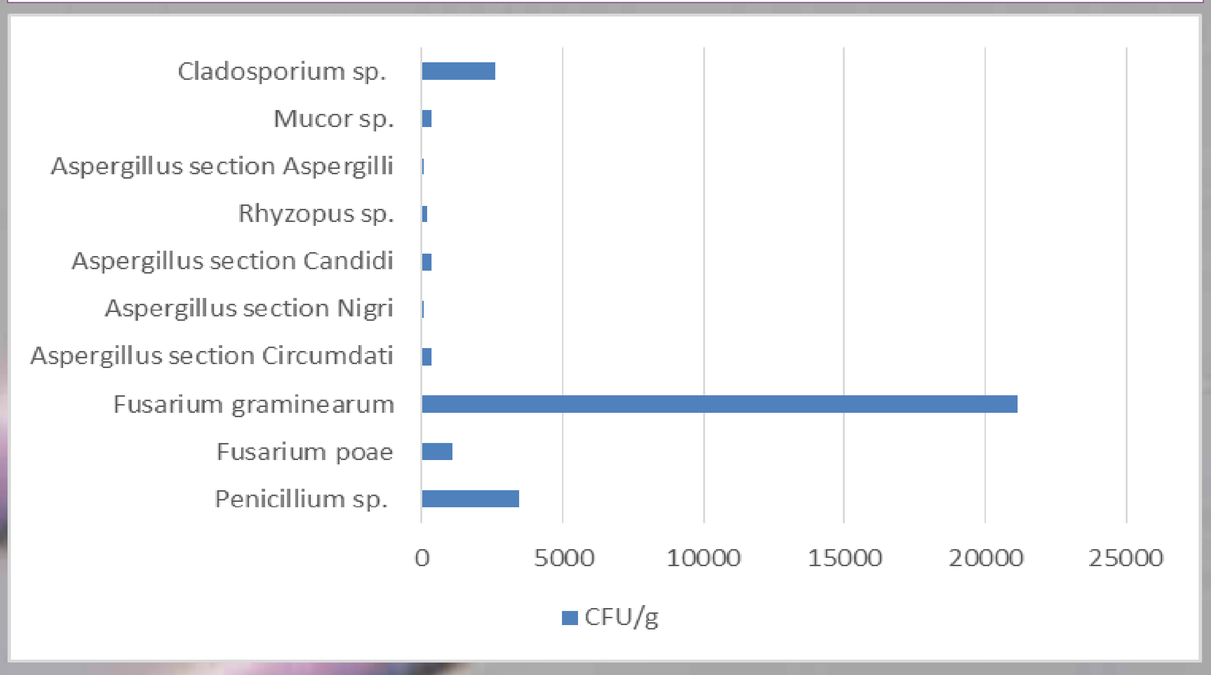
Figure 1 – Schematics of the experiment.



Results and Discussion

- Fungal contamination was evident in 72.7% of the analyzed poultry feed samples.
- Fungal load ranged from 0 to 13140 CFU/g.
- The most prevalent were *F. graminearum* complex (71.1%), *Penicillium* sp. (11.6%), *Cladosporium* sp. (8.8%) and *Fusarium poae* (3.6%).
- *Aspergillus* sections *Circumdati*, *Nigri* and *Aspergilli*, and *Mucor* and *Rhizopus* genus were also isolated.

Table 2 – CFU/g of the mycobiota present in the feed samples.



- The prevalence of *F. graminearum* complex is consistent with the fact that this fungus has become dominant in Europe as a result of the warmer temperatures in recent years [3].
- Considering the mycobiota isolated, feed contamination by mycotoxins such as deoxynivalenol (produced by F. *graminearum* complex) and ochratoxin A (produced by *Aspergillus* sections *Circumdati* and *Nigri)* should be considered [2].
- Mycotoxins contamination is probably a reality, particularly in the final product since mycotoxins resist to all the processing operations including thermal treatment.
- Data claimed attention for the probable co-exposure to fungi and mycotoxins of the workers in feed industries, which will be addressed in future studies.

References

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2 – Viegas et al., (2016). Climate changes influence in occupational exposure to fungi and mycotoxins. Occupational Safety and Hygiene IV Arezes et al. (Eds.) Taylor and Francis Group, London: 11-15. ISBN: 978-1- 138-02942-2.

3 – Miller (2008). Mycotoxins in small grains and maize: old problems, new challenges. Food Additives and Contaminants 25(2): 219–230.