

DC. Poster display: Global health and One Health

Abstract citation ID: ckae144.1214

Poultry farms as a One health priority for *Aspergillus* section *Fumigati* surveillance

Susana Viegas

B Gomes^{1,2}, *M Dias*^{2,3}, *P Pena*^{2,3}, *R Cervantes*^{2,3}, *S Viegas*^{2,3}, *C Viegas*^{2,3}

¹Centre for Ecology, Evolution and Environmental Changes, Faculdade de Ciências, Universidade de Lisboa, Lisbon, Portugal

²Health & Technology Research Center, Escola Superior de Tecnologia e Saúde, Instituto Politécnico de Lisboa, Lisbon

³NOVA National School of Public Health, CHRC, NOVA University Lisbon, Lisbon
Contact: Susana.Viegas@ensp.unl.pt

In poultry production environments, particulate matter (PM) is considered one of the harmful air pollutants [2]. Considering potential biological pathogens, the genus *Aspergillus* in particular, *Aspergillus fumigatus*, is a widely recognized human and animal pathogen [3]. Hot-humid farm environments could contribute to the proliferation of these fungi [4]. Therefore, poultry production

workers, besides animals [4], may be at a higher risk of inhaling fungi spores [4,5]. This study aimed to determine particulate matter (PM) contamination and analyze the prevalence of *Aspergillus* section *Fumigati* in air samples from poultry pavilions. Indoor and outdoor air samples were taken in the 1st, 2nd and 3rd weeks of birds growth cycle (n = 58). Air was collected through the impaction method (MAS-100) onto polycarbonate filters, set at 100 L/min, for 5 min. Followed by DNA extraction, and real-time PCR detection of *Aspergillus* section *Fumigati*. For PM evaluation, portable direct-reading equipment (Lighthouse, model 3016 IAQ) was used. Particle concentrations were measured (n = 67) at five distinct fractions during 5 min. Considering particles fractions, PM10 and PM5 where prevalent in 1st (58% PM10; 28% PM5), 2nd (63% PM10; 26% PM5) and 3rd (64% PM10; 25% PM5) weeks. These results evidence that coarse particles (between 2.5 and 10 µm) are the most relevant PM present in this setting. Regarding fungal detection, *Aspergillus* section *Fumigati* was widespread inside poultry

pavilions (62%, 26 out of 42), highlighting this environment has a potential reservoir of microbial pathogens [7]. Furthermore, PM can act as a host of biological fragments [6]. Overall, in addition to molecular analysis, future studies should consider using culture-based methods to assess the viability of pathogenic microorganisms and their infection potential [3]. From a One Health perspective, quantitative and qualitative research is required to fully understand this environment.

Key messages:

- This study evidence that coarse particles (between 2.5 and 10 μm) are the most relevant PM present and *Aspergillus section Fumigati* is widespread in poultry pavilions.
- A One health intervention should be considered in future studies.