

# Comparison of indoor and outdoor fungi and particles in poultry units

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## **Abstract:**

A descriptive study was developed in order to compare indoor and outdoor air contamination caused by fungi and particles in seven poultry units.

Twenty eight air samples of 25 litters were collected through the impaction method on malt extract agar.

Air sampling and particles concentration measurement were done in the interior and also outside premises of the poultries' pavilions. Regarding the fungal load in the air, indoor concentration of mold was higher than outside air in six poultry units.

Twenty eight species / genera of fungi were identified indoor, being *Scopulariopsis brevicaulis* (40.5%) the most commonly isolated species and *Rhizopus* sp.

(30.0%) the most commonly isolated genus. Concerning outdoor, eighteen species/genera of fungi were isolated, being *Scopulariopsis brevicaulis* (62.6%) also the most isolated.

All the poultry farms analyzed presented indoor fungi different from the ones identified outdoors. Regarding particles' contamination, PM<sub>2.5</sub>, PM<sub>5.0</sub> and PM<sub>10</sub> had a statistically significant difference (Mann-Whitney U test) between the inside and outside of the pavilions, with the inside more contaminated ( $p=.006$ ;  $p=.005$ ;  $p=.005$ , respectively).

The analyzed poultry units are potential reservoirs of substantial amounts of fungi and particles and could therefore free them in the atmospheric air.

The developed study showed that indoor air was more contaminated than outdoors, and this can result in emission of potentially pathogenic fungi and particles via aerosols from poultry units to the environment, which may post a considerable risk to public health and contribute to environmental pollution.

## **Keywords:**

poultry, indoor, outdoor, fungi, particles.

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