

Air Quality in Veterinary Teaching Facilities – Occurrence of molds

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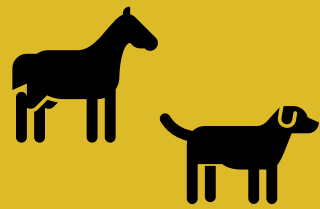
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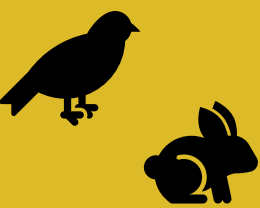
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Introduction



In veterinary teaching hospitals (VTH) the assessment of air quality holds paramount importance, not only for the well-being of the animals under care but also for the health of the staff involved. Understanding and managing the air quality in such facilities is therefore essential for maintaining biosecurity and ensuring the overall health and safety of both humans and animals.



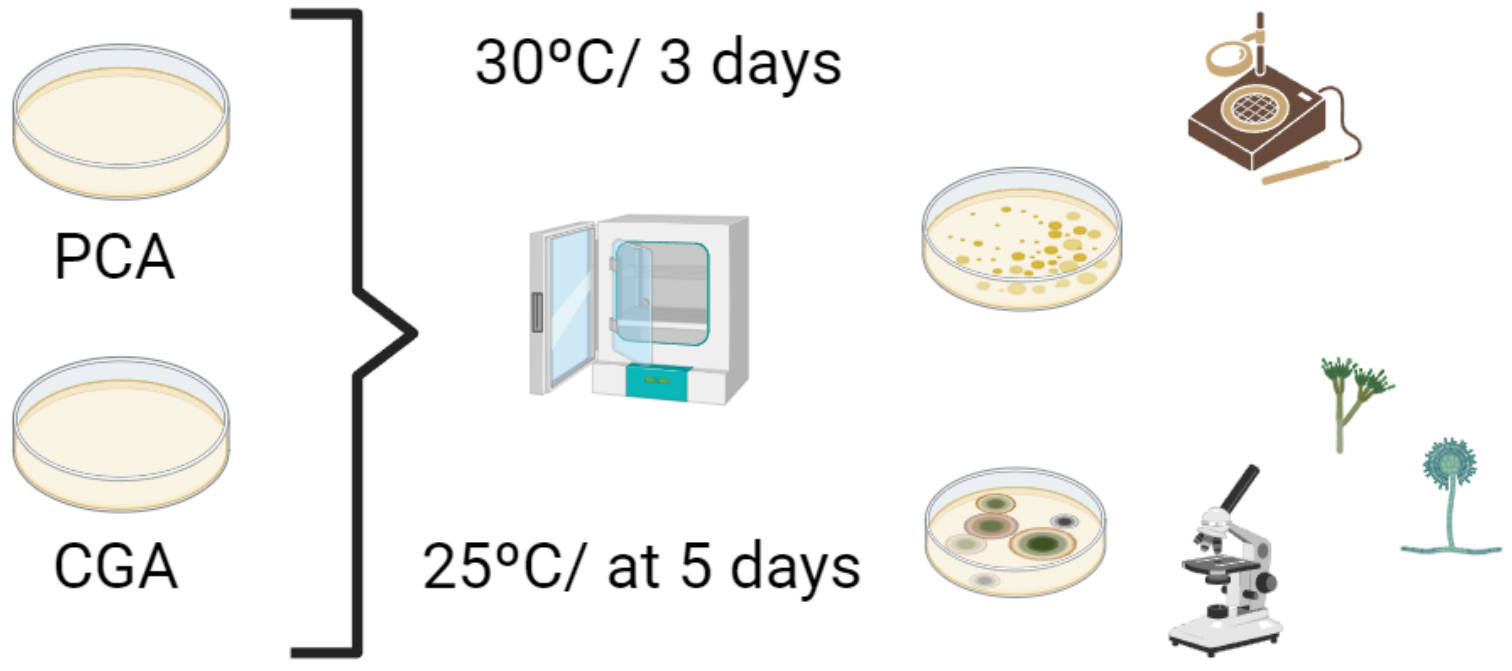
Objectives

This study was conducted to investigate the presence of pathogenic organisms, such as fungal and bacteria, within the hospital environment. The prolonged exposure of veterinary staff to these organisms can pose health risks, leading to allergic symptoms. The findings of this study have direct implications for the daily practices of the VTH.



Materials and Methods

Exposure time: 1h



Twenty-three samples were collected from the following services: reception hall, companion animals, farm animals and equines, exotic and wild animals, necropsy room, and clinical pathology laboratory.

The quantification of airborne microbiota was carried out by passive air sampling using settle plates based on the 1/1/1 scheme. A 9 cm Petri dish was briefly opened and left on a surface 1 m above the floor, 1 m from the wall for 1 hour.

The samples were collected in the morning, before the major rate of movement, and were incubated in Chloramphenicol glucose Agar® and Plate Count Agar®. Results were expressed in CFU/m³. The identification of the fungus genera was based on macroscopic and microscopic characteristics.



Results

- ✓ Mesophilic bacteria count presented a 2.89×10^2 CFU/m³, and the values varied from 2.33×10^3 to 5.24×10^3 CFU/m³.
- ✓ Moulds, a 2.93×10^2 CFU/m³ the values ranged from 0 to 8.64×10^2 CFU/m³.

Table 1: Counts (Mean \pm SD) CFU/m³ values of different organism groups isolated on PCA and CGA at different services (N=23)

| Services | Mesophilic | Molds and Yeast |
|----------------------------------|--------------------|---------------------|
| Reception hall | 309.89 \pm 530 | 320.62 \pm 277.25 |
| Consult | 51.09 \pm 64.8 | 130.99 \pm 185.25 |
| Surgery | 60.26 \pm 25.9 | 248.88 \pm 166.73 |
| Companion animals | 134.92 \pm 46.3 | 419.17 \pm 148.20 |
| Infectious diseases | 239.71 \pm 27.8 | 707.35 \pm 0 |
| Farm animal | 751.89 \pm 641 | 432.27 \pm 611.32 |
| Exotic and wild animals | 179.79 \pm 149.8 | 261.98 \pm 229.68 |
| Necropsy | 126.92 \pm 98.92 | 270.7 \pm 271.31 |
| Laboratory of clinical pathology | 127.06 \pm 1.85 | 458.47 \pm 92.62 |

Eighty-three percent of the samples presented a grow of moulds, being the most predominant genera *Penicillium* spp., n=22, in 32.34%, *Mucor* spp., n=18, in 26.47%, *Aspergillus* spp., n=12, in 17.64%, and *Cladosporium* spp., n=5, in 7.35% of the obtained isolates.



Conclusion

The study conducted in the veterinary hospital highlights the importance of assessing air quality as a biosecurity measure. By understanding and managing the levels of pathogenic fungal and bacteria in the air, the hospital can create a safer and healthier environment for both human and animal occupants.

The implementation of recommended measures will not only mitigate health risks associated with prolonged exposure but also contribute to the overall success of veterinary practices.

Acknowledgments

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