Assessing the Impact of Climate Change on Indoor Fungal Contamination in Lisbon Metropolitan Area Primary Schools: A Comprehensive Study

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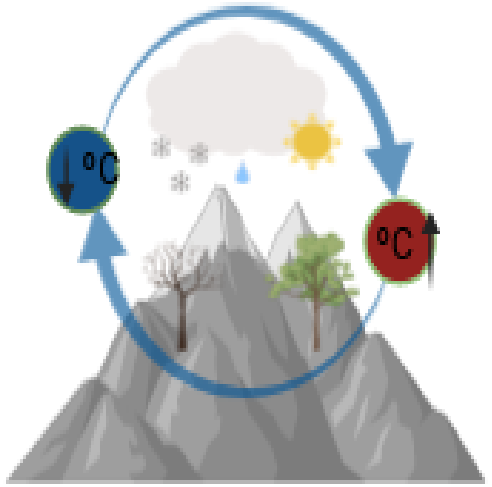
- Severe weather events due to global climate change raise concerns about indoor fungi.
- Potential alterations in fungal communities and mycotoxin production pose health risks.
- Educational settings face increased fungal growth and contamination, impacting health.

Climate Change

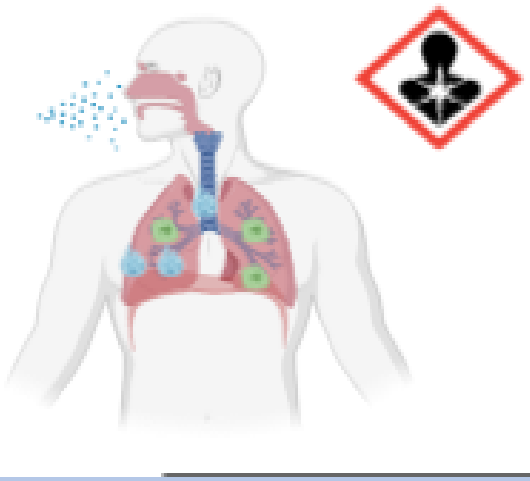


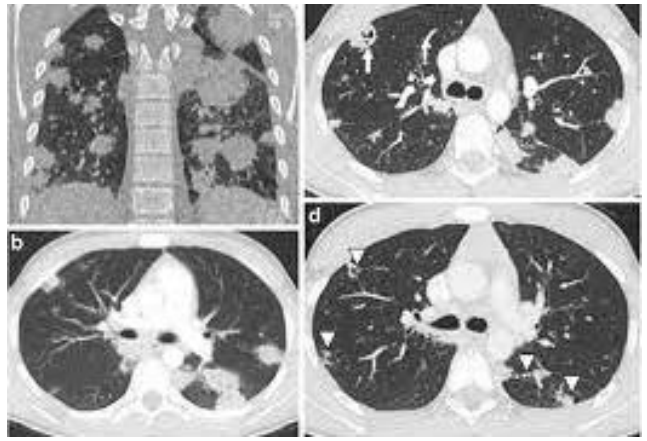
Mycotoxins

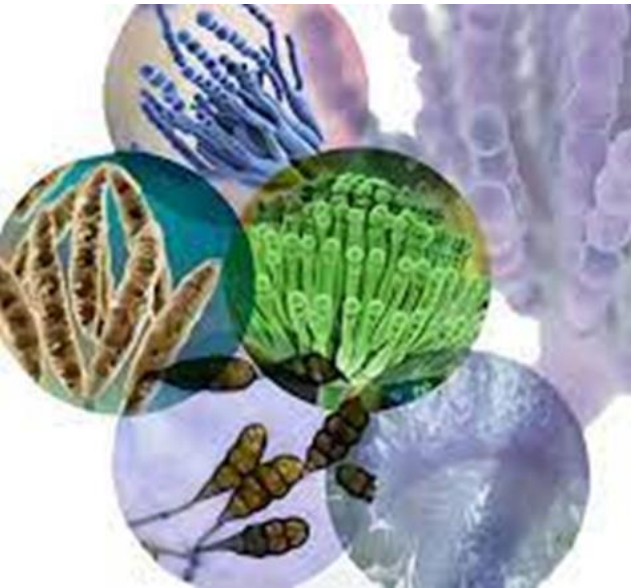
Food Safety issues

Indor air quality
increased fungal growth and contamination, impacting health.

Human Fungal infections
Health risk







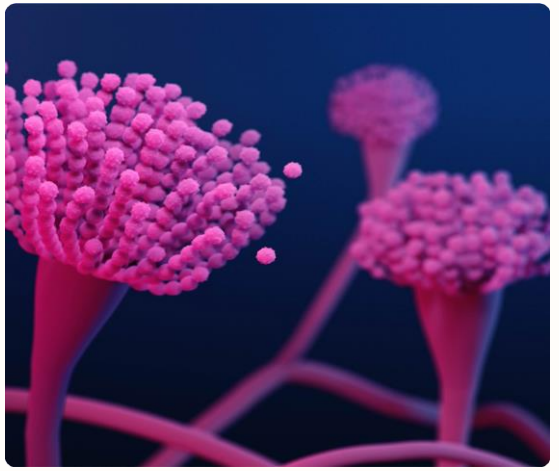
Factors that promote the presence of microorganisms in schools and the Public Health implications

- Potential Consequences of Fungal Infections:
- - Prolonged Hospitalizations,
- - Escalating Healthcare Costs,
- - Increased mortality rates.
- Social and economic Impact
- - Parental Work Absences,
- - Reduced Productivity,
- - Increased School Absenteeism,
- - Learning Disabilities,
- - Potential Long-Term Health Repercussions

Resistance profiles and pathogenic potential of fungi

Resistance profile

Fungi show increasing levels of resistance to antifungal drugs, which creates significant challenges for the control of fungal contamination.



pathogenic potential

Some types of fungi can cause respiratory or skin infections, while others can produce toxins that are dangerous to health, such as aflatoxin. In school environments, contact with fungi can also trigger allergic reactions in sensitive people, such as rhinitis, asthma, conjunctivitis and urticaria.

”Investigate the potential health impacts of exposure to azole resistant fungi and mycotoxins in school environments and explore how climate and geography might contribute to the overall air quality indoors”.

- To characterize fungal contamination and azole resistance profiles.
- To characterize mycotoxin contamination
- To assess how **climate and geography might contribute to the overall air quality in schools**
- To evaluate the impact of these environmental contaminants on children's health...
- To provide support for the implementation of risk management measures.

CITY OF LISBON

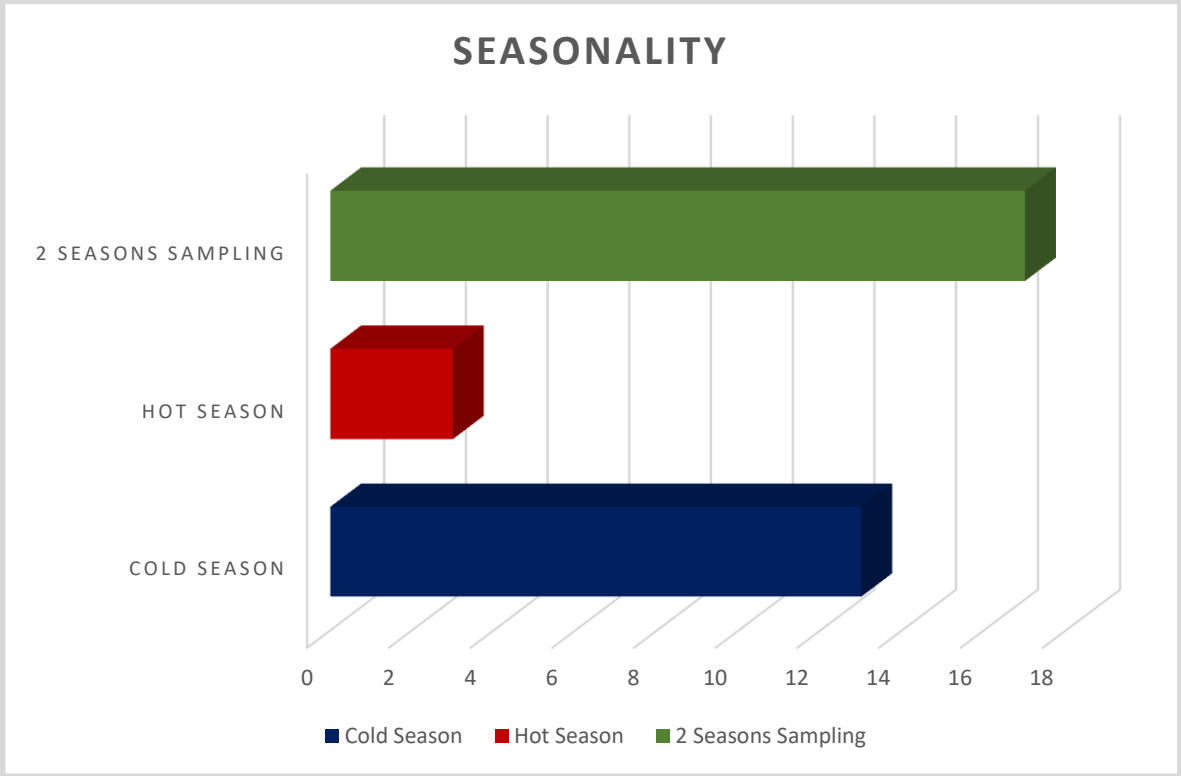
2 seasons:

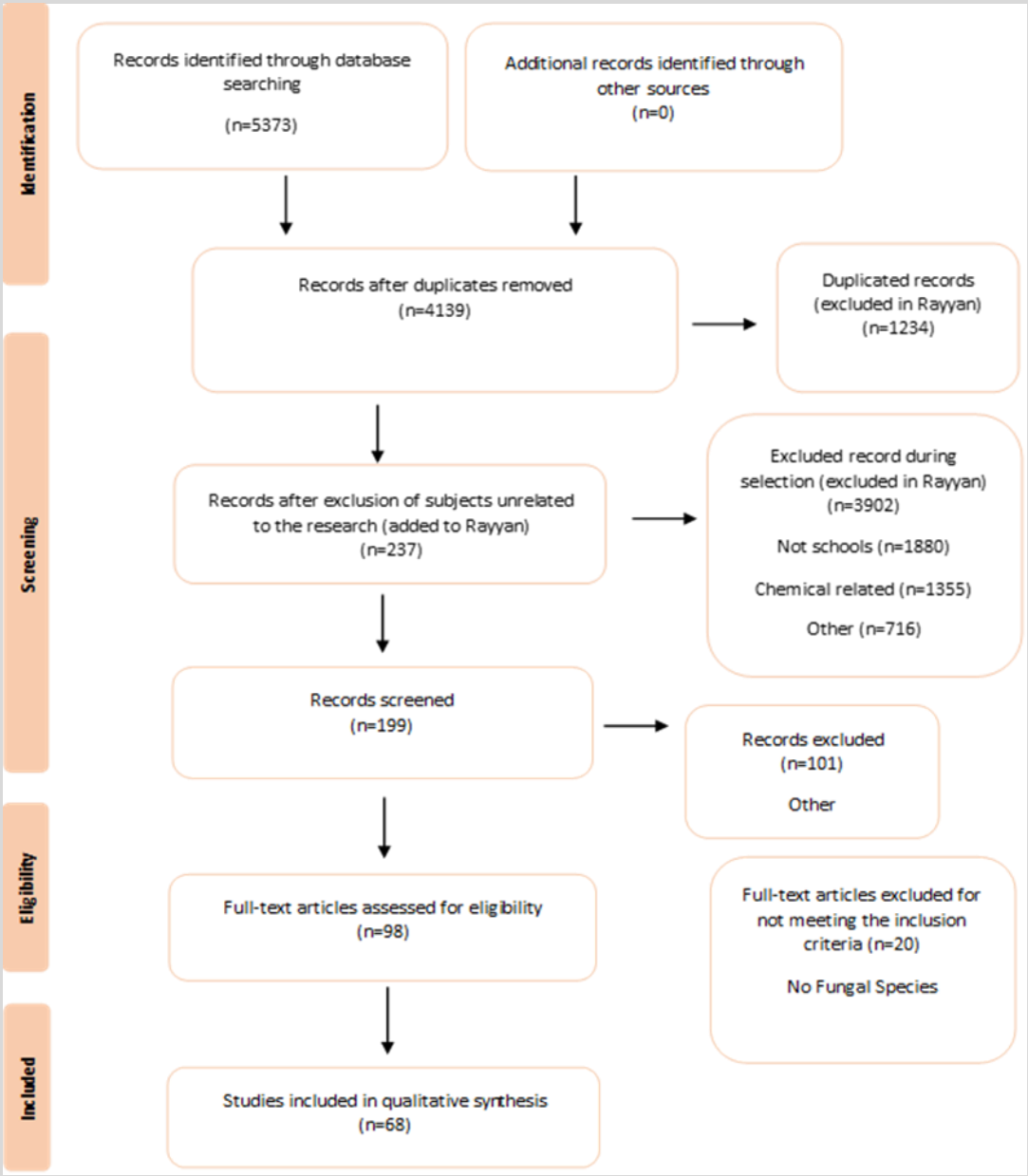
- Cold (autumn & winter)
- Hot (Spring & summer)

11 schools:

- 2 to 4 classrooms
- Average 25 students/classroom
- + Canteen
- + Library
- Gymnasium

Using the review findings, we organized the study and created a protocol for collecting and analysing samples.





Research Objectives

- Explore the relationship between climate change and fungal diseases.
- Assess indoor contamination and human exposure in Lisbon primary schools.
- Comprehensive microbial characterization through sampling methods.

Sampling Methods

+

EDC

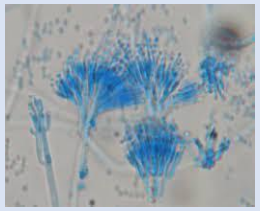
Active sampling using MAS-100 device and Anderson six-stage device

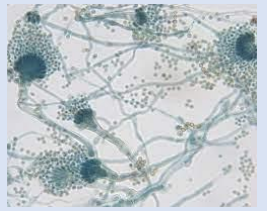
200L at a flow rate of 28.3 L/min

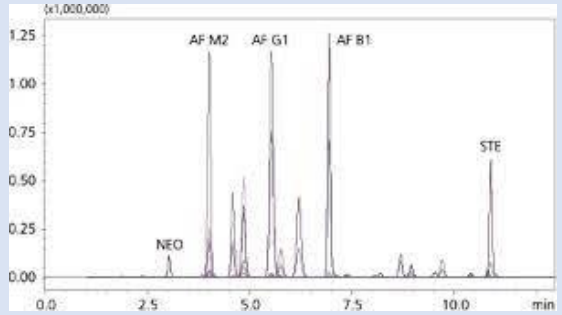
400L at a flow rate of 200 L/min

Passive sampling of mops, surface swabs, and settled dust.

Analysis Techniques







- Culture-based methods on MEA and DG18 culture media.
- Molecular detection of selected fungal sections (*Aspergillus*).
- HPLC for mycotoxin contamination assessment.

Preliminary Results

Active air sampling findings to be presented

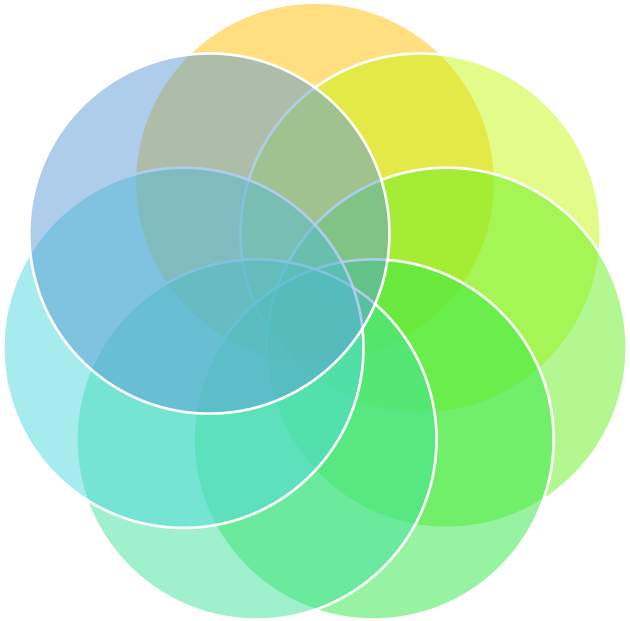
Initial insights into fungal contamination levels

Development of effective risk management strategies

Regular Inspection and Maintenance

- Professional Remediation - Monitoring

Proper Ventilation



Proper Storage

Moisture Control

Education and Awareness

Cleaning and Sanitation

Conclusion

- Importance of understanding climate-fungi-health nexus.
- Necessity for proactive measures to mitigate risks.
- Potential for further research and intervention.

SUSTAINABLE DEVELOPMENT GOALS

By characterizing the occupational microbial exposure and the potential health risk for workers aiming to reduce the adverse health effects and enhancing good working conditions (3).

By protecting Childrens rights and promoting safe environmental conditions for all (3).

By quantify the potential risks posed by climate change on both natural habitats and human communities.

Acknolegments

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Q&A

Open floor for inquiries and discussions.

Thank you