

TITLE: FUNGAL FINDINGS X CARBON DIOXIDE IN THE INTERNAL AND EXTERNAL ENVIRONMENTS OF MUNICIPAL SCHOOLS IN FORTALEZA, CEARÁ

AUTHORS: SANTOS, F. R. S.; SOUZA, P. R. H. de; PEREIRA, I. M.; SIEBRA, C. M.; CUNHA, P. S.; PANTOJA, L. D. M. PAIXÃO, G. C.

INSTITUTION: UNIVERSIDADE ESTADUAL DO CEARÁ – UECE, FORTALEZA, CE (AVENIDA DOUTOR SILAS MUNGUBA, 1700, CAMPUS ITAPERI, CEP 60741-000 FORTALEZA - CE, BRAZIL)

ABSTRACT:

Due to the diverse activities carried out in schools, air quality in these spaces is relevant topic. Therefore, we aimed to correlate the fungal findings and CO₂ concentration in indoor and outdoor environments of two schools in the city of Fortaleza, Ceará. Between January and December 2018, air monitoring was carried out in two primary schools (A and B), the internal environment being a central classroom and the external environment the main courtyard. The air samples were collected by the passive sedimentation method in Petri dishes with potato dextrose agar culture medium (Kasvi®), from 8 a.m. to 4 p.m. on random dates. At the same time, CO₂ levels were measured with a portable meter (Benetech GM8802®), at 8 a.m., noon and 4 p.m. At the end, the fungal samples were sent to the Microbiology Laboratory of Ceará State University and incubated for 7 days at 25-28 °C. The fungal species were identified by macro and micromorphological characteristics. The total CFU.m⁻³ values in the courtyards were 2,629 UFC.m⁻³ in school A and 1,055 UFC.m⁻³ in school B, while in the classrooms they were 2,743 UFC.m⁻³ in A and 856 UFC .m⁻³ in B. The largest fungal quantity in the courtyard of school A and classrooms of the two schools was during the dry season in Ceará, while in the courtyard of school B it was in the rainy season. Twenty fungal genera were identified in school A and 28 in school B, 17 (A) and 23 (B) in the courtyards and 14 (A) and 23 (B) in the classrooms. In the courtyards, the genus *Aspergillus* was found in 100% of the samples collected in both schools. In A it was followed by the genera *Penicillium* (83.3%), *Exophiala* and *Fusarium* (48.6%), while in B the following genera were *Alternaria*, *Chrysosporium*, *Cladosporium*, *Fusarium*, *Penicillium*, *Scytalidium* and *Trichoderma* (all 33.3%). In the classroom of school A, the leader was *Aspergillus* (100%), followed by *Penicillium* (83.3%), while in B, *Aspergillus* was also the most prevalent genus (100%), followed by *Penicillium* (50%) and *Scytalidium* (41%). As for CO₂ concentration in the courtyards, the mean of school A was 382 ppm and in school B it was 553 ppm, while in the classroom of A it was 379 ppm and B it was 469 ppm. In all collections, the levels were within the recommendations of ANVISA. No correlation between fungi and CO₂ was established, and the environments with greater fungal diversity did not necessarily have the highest fungal quantities. Thus, it is necessary to periodically monitor these spaces to support actions to reduce airborne contaminants.

Keywords: air pollution, fungi, concentration CO₂.

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