TITLE: ANEMOPHILIC FUNGI VERSUS WIND SPEED IN CEMETERIES IN THE MUNICIPALITY OF FORTALEZA

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ABSTRACT:
Various studies have been published involving the quality of water and soil in cemeteries, but there is a shortage of studies on air quality in these environments. Therefore, the objective of this study was to correlate the fungal findings and the wind speed of indoor and outdoor environments in cemeteries in Fortaleza, Ceará. Between September 2019 and January 2020, the air was monitored in three cemeteries, two of the traditional type (A and B) and one of the park/garden type (C), with two internal sectors (office and chapel) and two external ones (main entrance and end of the cemetery). Air samples were collected using the passive sedimentation method in Petri dishes with potato dextrose agar (Kasvi®), from 8 a.m. to 11 a.m., on a random day/month. At the same time, the wind speed (Km/h) was measured using a portable anemometer (KP-8016 KNUP®), in order to establish possible relationship with the increase in fungal presence in the environments. At the end, the fungal samples were sent to the Microbiology of Ceará State University where they were incubated for 7 days at 25-28 °C for further morphophenotypic identification. Cemetery A had the highest fungal quantity (3.194 $UFC.m^{-3}$), followed by B (1.595 $UFC.m^{-3}$) and C (1.427 $UFC.m^{-3}$), and the external sectors had the highest monthly average (569 $UFC.m^{-3}$) compared to the internal ones (450 $UFC.m^{-3}$). Twenty-five fungal genera were identified in cemetery C, 22 in B and 17 in A. In the external sectors, there was greater diversity of genera (26) than in the internal ones (25). In all cemeteries, the genera *Acremonium*, *Aspergillus*, *Chrysonilia*, *Cladophialophora*, *Cladosporium*, *Curvularia*, *Exophiala*, *Fusarium*, *Mucor*, *Penicillium*, *Rhizopus*, *Scytalidium* and *Trichoderma* were identified. As for wind speed, the highest average (1.51 km/h) was in cemetery B, followed by 1.47 km/h in A and 1.40 km/h in C, on the Beaufort 1 wind strength scale. Pearson's correlation was used to analyze the fungal quantity and wind speed. Cemetery A showed moderate correlation ($p = 0.505$), C weak had correlation ($p = 0.206$) and B was very weakly correlated ($p = 0.126$), while the correlation of fungal variety and wind speed in the three cemeteries was very weak ($p = 0.06$). Anemophilous fungi had weak correlation with wind speed, so in cemeteries, wind speed is a factor with little influence on the fungal presence.

Keywords: air pollution, fungi, sepulcher.

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