

**TITLE:** BIOAEROSOLS AND ENVIRONMENTAL COMFORT IN AIR CONDITIONED BUSES IN THE CITY OF FORTALEZA

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**ABSTRACT:**

Managers of bus companies seek to provide comfort to passengers by controlling temperature and humidity in their fleets by using air conditioners. Within this context, the monitoring of bioaerosols, especially airborne fungi, is important, since they are bioindicators of air quality. Therefore, the objective of this study was to analyze the environmental comfort (temperature and humidity) and its influence on the quality and quantity of airborne fungi in buses with air conditioning in the city of Fortaleza, Ceará. Between September and June 2019, four air conditioned buses were monitored. The samples were collected through passive sedimentation in Petri dishes with potato dextrose agar (Kasvi®) and average exposure of 67 minutes/collection, considering the total route of each bus, on a random day/month. Humidity and temperature levels were also monitored using a portable thermohygrometer (JPROLAB®). Fungal samples were sent to the Microbiology Laboratory of Ceará State University and incubated for 7 days at 25-28 °C for further morphophenotypic identification. The greatest fungal quantity was observed in the buses of line C (666 UFC.m<sup>-3</sup>), followed by D (330 UFC.m<sup>-3</sup>), B (318 UFC.m<sup>-3</sup>) and A (271 UFC.m<sup>-3</sup>). Twenty-four fungal genera were identified: *Aspergillus*, *Penicillium*, *Cladosporium*, *Exophiala*, *Trichoderma*, *Acremonium*, *Chrysonilia* and *Cladosporium*, common to all the monitored buses. The temperature had lowest and highest means of 27.3 °C and 28.5 °C. As for air humidity, the averages ranged from 58.5% to 71%. Fungal quantities were submitted to Pearson's correlation and weak correlations were obtained for temperature ( $p = 0.005$ ) and humidity ( $p = 0.397$ ). Regarding fungal diversity, the temperature factor had a strong correlation ( $p = 0.821$ ) and humidity was moderately correlated ( $p = 0.658$ ). We concluded that temperature and humidity did not influence the amount of fungi in the air, but temperature strongly influenced the diversity of genera and humidity in a moderate way (directly proportional variables). Therefore, it appears that the air quality with respect to the various airborne fungi in the buses studied was related to the environmental comfort offered through the control of temperature and humidity.

**Keywords:** transport, air conditioning, fungi.

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