

**TITLE:** MONITORING AND ANTIMICROBIAL RESISTANCE ANALYSIS OF AIRBORNE BACTERIA FROM URBAN PUBLIC ENVIRONMENTS USED FOR LEISURE ACTIVITIES

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**ABSTRACT:**

Microorganisms are essential biological components of aerosols and can be vital parts of the atmospheric system. The concentration of these organisms in the air may result in biological pollution and may represent biological risks for other living beings, including humankind. In the city of Fortaleza, one of the main coastal city capitals in northeastern Brazil, air quality of public urban areas used for leisure and physical exercises were studied. The airborne microbiota of squares, parks and similar public spaces were quantitatively and qualitatively analyzed. The air samples were collected in the rainy and drought seasons using the passive sampling technique with selective growth mediums for fungi and bacteria. Information about average temperature, relative air humidity and percentage of wooded areas were registered. After the growth period (48h for bacteria and 7 days for fungus) the total number of colony-forming units was registered and 10 isolates of bacterial and fungal colonies were selected from each point for isolation and later identification. The antimicrobial resistance profiles were evaluated by disc test assays (antibiogram). Bacteria were more abundant than fungi in all studied areas. Among all isolates, bacteria ranged from 76% (Point 1) to 90% (Point 3) of the suspended microbiota in the rainy season, and in drought season these percentages varied from 87% (Point 1) to 91% (Points 2 and 3). The gram-positive bacteria were overall more detected. The most frequent genus for bacteria were *Bacillus* and *Enterobacter*, and for fungus, *Aspergillus* and *Penicillium*. Considering the total of 60 analyzed bacteria, 50% have shown (intermediate or full) resistance to at least one of the tested antimicrobials. This study contributes to a better knowledge of urban air quality in the capital of Ceará, since there is almost no information available in the literature about the subject.

**Keywords:** bacterial resistance, fungi, bacterium, microbiological air analysis.

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