TITLE: LICHENS AS INDICATORS OF AIR QUALITY IN HOSPITAL ENVIRONMENT

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ABSTRACT:
The ability to absorb and retain pollutants without excreting them makes lichens excellent bioindicators of air pollution. Environments with air conditioning, such as hospitals, can concentrate contaminants and cause health risks. This study aimed to evaluate the use of lichens as bioindicators of air quality in hospital areas. Lichen samples of the species *Haematomma personii* and *Lecanora achroa* were collected from the bark of the *Anadenanthera macrocarpa*'s tree and sent to the laboratory for immediate analysis in the control samples (T = 0). In addition, the experimental samples were fixed in the blue (non-urgent), green (not very urgent) and red (very urgent) rooms of the HU-UNIVASF emergency department, two in each room. The analyzes were performed with 30 days (T = 30) and 60 days (T = 60) after fixation. Chlorophyll content (Chl) **"a"** and **"b"** and feofitins (FEO) **"a"** and **"b"** was conducted by acetone extraction and spectrophotometer reading. Microbiological analysis of lichen by sowing in culture media and antibiogram were evaluated. In the morphological analysis it was possible to observe alterations in the coloration of *H. personii* in the green room at T = 30 and T = 60, in the blue room only the color changed at T = 60 and in the red room there was loss of tissue at the edge of the apothecium. For *L. achroa*, it was observed gradual loss of time-dependent coloration in the green room; small change of color in the T = 60 in the blue room and discoloration of the stalk, with appearance of white spots in the middle of the stalk in the red room. In relation to the photosynthetic analysis, in comparison with T = 0, *L. achroa* presented increase ($p < 0.05$) of Chl **"a"** in T = 30 in the blue and red rooms, and increase in T = 60 of FEO **"b"** in the green and red rooms. At the same time, *H. personii* at T = 30 increased ($p < 0.05$) both Chl **"a"** and FEO a in the red room and at T = 60 increased Chl **"a"** in the blue and green rooms, Chl **"b"** in the red room and FEO **"b"** in the blue room. In the microbiological analysis at T = 0, *Staphylococcus* spp., sensitive to Oxacillin, and environmental bacteria were isolated. At T = 60, *Staphylococcus* spp., with the same sensitivity, and *Micrococcus* spp. in all environments, except in the red room, in addition to environmental bacteria in all rooms. Thus, lichens presented data consistent with a good monitoring of the air quality in a hospital environment, and could be used for this purpose.

Keywords: bioindicator, indoor environments, lichens.