Title: Density and morphological characterization of epiphytic and endophytic bacteria associated with species of *Bromeliaceae* of Bancadas Lateríticas (cangas) in the region of Morraria do Urucum - Corumbá, Mato Grosso do Sul.

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Abstract:

The Bancadas Lateríticas are environments which plants nutritional resources and soil microorganisms is scarce. The study in this environment affords to access plants that can adapt to these conditions and microorganisms associated with them. The aim of this study was to evaluate the density of epiphytic and endophytic bacteria associated with roots of species of bromeliads *Dyckia excelsa*, *Dyckia leptostachya* and *Deuterocohnia meziana* as well as isolate and characterize morphologically these microorganisms. The collection of roots was performed in three different points in the Morraria do Urucum area. The roots were washed in running water and then weighed and processed. For counting and isolation of epiphytic bacteria, 3g of root was placed in Erlenmeyer containing PBS buffer (pH 7.4) and then subjected of shaking motion (100 rpm) at 28° C for 1h. Subsequently the samples were diluted (10^{-2} to 10^{-5}) in PBS buffer and spread on TSA 4% (Tryptic Soy Agar) supplemented with a fungicide Cercobin 700WP (50µg/ml) plates. The endophytes bacteria were counted and isolated by superficial disinfestation tissues, which consisted in washing steps in ethanol 70%, sodium hypochlorite at 2% active chlorine plus Tween 20, ethanol 70%, followed of two washes in sterile distilled water. The tissues were fragmented and crushed in 10 ml of PBS buffer. The material was transferred to test tubes and incubated under agitation (150 rpm) at 28°C for 1h. Dilutions in PBS buffer were spread on TSA 4% supplemented with fungicide Cercobin 700WP plates. Three replicates were used by serial dilution (10^{-2} to 10^{-5}) on petri plates, which were incubated at 28°C and evaluated in two and eight days of growth. For the isolation, picking bacterial colonies of plates, purified and maintained in TSA 4%, which the colony characterization was made based on the shape, border, brightness, elevation, color and size parameters that were used for cluster analysis using the Jaccard coefficient. The total number of epiphytic bacteria in the roots of *D. excelsa,* were $8.4x10^6$ epiphytic and $4.2x10^8$ endophytic at Point 1. In *D. leptostachya* the count resulted in $2.6x10^6$ epiphytic and $3x10^6$ endophytic in Point 1, in $1.45x10^7$ epiphytic and $4x10^6$ endophytic in Point 2, and $3.9\ x10^8$ epiphytic and $8\ x\ 10^6$ endophytic in point 3. The specie *D. meziana* were counted $1x10^5$ epiphytic and 0 endophytic in Point 2 and $8.2\ x10^5$ epiphytic and $9.9\ x10^7$ endophytic in Point 3. We isolate a total of 30 endophytic bacteria, which were clustered into five groups subdivided into 11 distinct subgroups and 71 epiphytic bacteria clustered into four groups with 16 subgroups. Morphological analysis showed more diversity for the epiphytic than endophytic community, which it was expected, because the endophytic condition is specific into bacteria and the host, besides there is a greater nutrients availability in rhizoplane by exudates which facilitate the epiphytic bacterial diversity.

Keywords: microbial, bromeliads, TSA, roots, population.

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