Title: Diversity and biotechnological potential of epiphytic yeasts and yeast-like associated with bromeliads from Atlantic Forest in Alagoas State, Brazil

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Abstract:

Bromeliads are Neotropical plants with physical arrangement and physiological characteristics that provide microhabitat to various organisms of different taxonomic groups, including a variety of bacteria and yeasts. The leaf surface (phylloplane) of a bromeliad is a microhabitat exposed to various environmental stresses including solar radiation and high temperatures. The microbiota associated have developed several strategies to tolerate these environmental stressors, such as production of pigments, enzymes, toxins and polysaccharide capsule. This study has two main goals: to survey the diversity of yeasts and yeast-like associated with bromeliads of Atlantic Forest in Alagoas State, Brazil and the biotechnological potential of them. A total of 56 bromeliad samples (42 leaves and 14 flowers) were collected in four municipalities (União dos Palmares, Quebrangulo, Murici and Maceió). Samples were washed twice in sterile distilled water and Tween 20 at 0.05% solution, and then kept shaking at 180rpm. The final product was spread in YM medium at pH 4.0 supplemented with chloramphenicol 0.04% and incubated at 22-25℃ for 7 days. The production of five extracellular enzymes (amylase, cellulase, esterase, pectinase, and protease) was evaluated. For the enzymatic production analysis, hydrolysis in solid culture medium with specific substrate for each enzyme was used. The isolates were identified by PCR and sequencing the D1/D2 domain of the 26S rDNA. One hundred and twenty-three isolates were obtained, whereas 55% of those produced amylase, 22% cellulase, 54% esterase, 19% pectinase, and 29% esterase. A total of 47 isolates were identified and they were represented by 14 genera (*Aureobasidium, Bullera, Candida, Cryptococcus, Fellomyces, Hannaella, Hortaea, Kordyana, Pichia, Pseudozyma, Rhodotorula, Sympodiomycopsis, Sporobolomyces* and *Tremella*). These results indicate that there is an astonish diversity of yeasts and yeast-like associated with bromeliads in the northeastern region of Atlantic forest and these isolates demonstrated a great potential for biotechnological applications.

Keywords: phylloplane, microorganisms, hydrolases, hotspot.

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