



ISOLATION AND MORPHOLOGICAL CHARACTERIZATION OF ENDOPHYTIC FUNGI FROM GUADUA ANGUSTIFOLIA KUNTH IN THE COLOMBIAN COFFEE REGION

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The Colombian Coffee Region represents a biodiversity hotspot harboring *Guadua angustifolia* Kunth, one of the most economically important bamboo species in Colombia with approximately 45,000 hectares. This species hosts diverse endophytic fungi that constitute an unexplored reservoir of microbial biodiversity with significant ecological importance. This research aimed to explore endophytic fungal diversity associated with *G. angustifolia* through systematic isolation and morphological characterization from different plant tissues. Plant material was collected from three representative sites: Botanical Garden of Universidad Tecnológica de Pereira (Risaralda), El Bambusal farm (Montenegro, Quindío), and El Paraíso farm (Belén de Umbría, Risaralda). Four tissue types were sampled: basal culms, middle culms, apical culms, and leaves. Surface sterilization involved sequential treatments with 75% ethanol (3 min) and 3% sodium hypochlorite (30, 90, and 180 s), followed by sterile water rinses. Sterilized segments were plated on potato dextrose agar supplemented with amoxicillin (300 ppm) and incubated at 25°C. Isolated fungi were purified through successive subculturing until axenic cultures were obtained. Morphological characterization included macroscopic analysis of colony texture, pigmentation, growth patterns, and microscopic examination of hyphal morphology and reproductive structures using lactophenol cotton blue staining and slide culture techniques. Results demonstrate successful isolation of endophytic fungi from all tissue types across three geographic locations, with 22 isolates obtained from site 1, 22 from site 2, and 28 from site 3, totaling 72 fungal isolates and revealing significant microbial diversity within *G. angustifolia*. Morphological characterization identified multiple distinct fungal morphotypes exhibiting diverse colony characteristics, growth rates, and microscopic features, indicating taxonomic diversity within the endophytic community. Colonization frequency varied among tissue types, with differential patterns between culm segments and leaves. This biodiversity survey contributes fundamental knowledge about fungal endophyte diversity in Colombian bamboo ecosystems and establishes a foundation for understanding ecological roles of these microorganisms in tropical biodiversity conservation. The authors thank the support from their institutions as well as the Ministry of Science, Technology, and Innovation of Colombia.

Keywords: *Guadua angustifolia*, endophytic fungi, biodiversity, Colombian Coffee Region, microbial diversity

