Online Perspectives Journal: Biological & Health
Proceedings of the 5th Research & Development PROVIC/PIBIC Seminar
2nd CNPq Scientific Initiation Meeting
Vol. 10, Nº 34, Supplement, 2020
DOI: 10.25242/8868103420202141

Ecoproducts obtained from organic vegetable residues and fungi

Ana Carla Sant'Ana Siqueira [1], *Glória Andreia Ferreira Hernández*[2], *Luana Pinto de Souza Tavares*[2], *Maria das Graças Machado Freire*[3], *Vicente Mussi-Dias*[4]

(1) PIBIC/CNPq Scientific Research Student PIBIC/CNPq – Architecture Course; (2) Technical-assistant in Chemistry – Chemistry and Biomolecules Laboratory - LAQUIBIO/ISECENSA; (3) Collaborative Researcher – Chemistry and Biomolecules Laboratory - LAQUIBIO/ISECENSA;(4) Guiding Researcher – Chemistry and Biomolecules Laboratory - LAQUIBIO/ISECENSA – Research and Post-Graduation Center – CPPG – CENSA-ISECENSA Superior Education Institutes, Rua Salvador Correa, 139, Centro, Campos dos Goytacazes, RJ, Brazil

The use of organic vegetable residues associated with fungi colonization in the production of structures to be used in artifacts composition has been little explored. Although reports on the use of similar techniques for the production of parts for civil construction, architecture and crafts can be found in Europe and in the United States, no reports alike exist in Brazil. Some fungi species have the ability of degrading timber and can be used to agglomerate fragments of cellulose-rich materials. At the same time, the exploration and selection of native species to this end may contribute for the prospection of organisms of industrial interest. Thus, this paper proposed to isolate timber-decomposing fungi aiming to assess them for their ability to colonize substrates for the production of an ecological structure which, by its turn, could compose biodegradable materials to be used for various purposes. Wood mushrooms were obtained from vegetable remains in sandbank areas and from rotting trees, in Campos dos Goytacazes municipality, RJ. Isolations were carried out to obtain pure cultures (source of inoculum) by sowing them in various substrates with variable organic materials composition: lawn grass, cane bagasse, mesocarp fiber from green coconut fruit and light wood sawdust. Materials were then dried in the shade, cut in pieces and crushed in a blender. Twenty percent wheat bran and 2% hydrated lime solution were added for wetting and autoclaving. After substrate sterilization, each mushroom isolate was seeded and incubated in the dark for mycelial growth assessment. Evaluations were carried out by verifying those fungi that developed the best, considering growth speed, greater mycelial substrate coverage and internal natural compaction of the organic material used. *Pycnoporus sanguineus* was identified as the best fungus to obtain the "Ecoproduct" proposed in this work from – in association with a substrate based on sugarcane bagasse and sawdust. In such association, the fungus was able to uniformly colonize the substrate, both internally and externally; besides, it exhibited the orange pigmentation typical of the species, adding aesthetic value to the bioproduct. In addition, the parts produced were light and compact, presenting themselves as alternatives to the thermoplastic materials and synthetic foams used for the manufacture of various artifacts.

Keywords: Bioremediation. Mycology. Biodegradable architecture.

Supported by: ISECENSA; CNPq.