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Proposal for a new monolithic constructive system using mycocomposite nucleus

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“Green” materials and productive processes have progressively been searched for. In the last years, it has increased the number of researches regarding mycocomposites characterization and, above all, their applicability. Biofabrication is a process that is carried out by incubating the substrate composed of organic residues with fungal mycelium. During incubation, the fungus gradually develops on the substrate, penetrating the microscopic channels of the different residues, and acting both as a reinforcing fiber and as a binding material. This Project was designed to seek the most suitable combination between substrate components and the fungus *Ganoderma sp.* aiming to obtain a mycocomposite which could be used as a nucleus of an alternative monolithic constructive system. In this project, composites using the fungus *Ganoderma sp.* and five different types of waste (white wood sawdust, cornstarch, bark and coffee grounds, and piassava fiber) were investigated. The morphology of these components, as well as mycelium and substrate interaction, was studied by scanning electron microscopy technique. The mechanical properties were determined through bending and compression tests, being correlated with the Fourier transform infrared spectroscopy analysis. The fabrication of a mycocomposite panel was proposed as an application; it could be included as the core of the prototype of a building system of walls, structured with steel and mortar. Thus, this project aimed to contribute to the ecosystem’s quality, once the raw material used was composed of organic waste that would be reinserted in a production process instead of being discarded in nature. Besides, the project suggests the production of a new biologically-based material for civil construction.

Keyword: Mycelium; material; biocomposite.

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