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Compression behavior of mycocomposites obtained from different substrates and fungi

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Currently, agroindustrial residues have been increasingly used to minimize anaerobic decomposition processes that cause emissions of methane: one of the most important greenhouse effect gases. Several strategies have been developed to allow management of part of the large quantities of lignocellulosic residues, including the use of organic matter degrading microorganisms. Basidiomycete fungi, also known as mushrooms and stick ears, play a fundamental role in the cycling of nutrients in nature and particularly in the carbon cycle, once they are excellent degraders of lignin: the second most abundant biopolymer on Earth. The aim of this project is to assess these white rot fungi potential to offer an organic based residue which could be an alternative for sustainable material production. Several wood sawdust, bark and/or coffee grounds and grain bran based substrates, with variable material percentages, were tested. Sterile pre-mycelial substrates were transferred into molds and incubated at 25°C for 15 days. After such period, the resulting composite was subjected to a temperature of 80^0C for 12 hours to eliminate further fungus development. Relationships between substrates chemical composition and resulting composites mechanical properties were, then, analyzed through compression tests. It was expected that the resulting mycocomposite, which is totally natural and biodegradable, be a representative of the circular economy: an economy in which products, besides being durable, allow the generation of new recyclable residues at the end of their useful life.

Palavras-chave: Bioremediation. Mycelium . Sustainability.

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