Bioprospection of cellulolytic fungi for bioethanol production. Isolation of fungi from intestine tract of brazilian termites.

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Bioethanol is the most widely used liquid fuel, representing an important source of renewable energy. It is produced as a result of fermentation of sugars, starches and other carbon sources, as well as cellulosic materials. Nowadays, bioethanol industry is focused on developing technologies that allow the use of cellulolytic biomass as raw material.

Insects such as termites feed on cellulose, which is degraded by the complex microbial communities that reside in the small intestine of these organisms. The cellulolytic enzymes present in termites may stem not only from the intestinal microflora, they could be derived from their metabolism and/or fungi that survive in the insect, acquired through diet. These fungi are greatly important in the degradation of lignocellulose material by several factors: they have simple nutrient requirements, they are more competitive against other microorganisms and they produce extracellular enzymes.

Our work involves the isolation and characterization of new fungal communities derived from termites which are able to degrade cellulose and cellulolytic complex materials (bagasse from sugar cane).

Fungi were isolated in rich media at 30°C. Screenings were performed in minimal media with carboxymethyl-cellulose (CMC) and bagasse as unique carbon source.

From the total fungal community isolated from termites, a 92.1% were positive for CMC degradation and 72.2% were positive for bagasse degradation. The ability of cellulose degradation of all isolates was compared with *Trichoderma reesei* (control fungi). Results showed that 94% of CMC degradated fungi had a higher activity than *T. reesei*. However, 52% of bagasse degradated fungi showed higher activity than control fungi.

In conclusion, cellulolytic fungal candidates were described as potential candidates of biomass degradation.

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