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Solid state fermentation for production of *Trichoderma stromaticum*

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Trichoderma stromaticum is a parasite of *Crinipellis pernicioso*, a cacao disease commonly known as witch-broom. This disease is pointed as the main cause of decrease in cacao production in Latin American countries. *T. stromaticum* mode of action and effectiveness are attributed to its chitinolytic activity against *C. pernicioso*. Different species of *Trichoderma* have been produced by means of semi-solid fermentation process (SSF). This work aimed at optimizing *T. stromaticum* production by SSF, using wheat bran with chitin or oat as chitinase promoters in the culture medium. The bioreactor proposed consisted of a 3L polypropylene bag with a special aperture for feeding/sampling the reactor. The set reactor + substrate, was sterilized by microwave treatment.

The parameters studied were: initial substrate humidity; photoperiod; concentration of the inoculum; and presence of chitinase promotor. The humidity was determined and correlated with water activity (a_w) - established by an isotherm specially obtained for this culture medium. For chitinase determination, water was added to the sample, followed by maceration, filtration and centrifuging, and the supernatant obtained was used for further determinations by DNS method. It was observed that the substrate had an special buffer characteristic, which is very useful for SSF studies. Among the parameters observed, humidity had the most important correlation with chitinase production – the higher the humidity, the higher the chitinase production. All other parameters had very small effect on the chitinase production. The results also showed a good development of the *T. stromaticum* in the reactor proposed.