OUTLOOK ON THE USE OF SEMI-SOLID CULTURE MEDIA FOR THE PRODUCTION OF BACILLUS THURINGIENSIS. C 60

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Based on the fact that wider use of Bacillus thuringiensis (B.t.)for the biological control of insect pests has been restricted by economic reasons, studies were initiated to explore the feasibility of producing B.t. endotoxin preparations using semi-solid fermentation with cheap components as substrates. Some agroindustrial by-products including solid residue from paper industry, residual fermented malt from beer industry, and a special kind of meal obtained from residual cookies and biscuits of bakery industry, were investigated for their abilities to support B.t.growth and spore production. The technique was based upon the employment of semi-solid type of fermentation in erlenmeyers whose culture medium was composed by each residue separated, or by the combination of two residues. The incubation was done at 30°C, with one hand-shaking each day, and spore counts and pH measurement were done until the seventh day. The semi-solid process used takes nearly 168 hours to produce 10^{10}-10^{13} spores/g. The submerged fermentation results are nearly 10^{9} - 10^{10} spores/ml, in about 48-72 hours. Economic studies are conducted to determine the advantageous process, but the low cost of residues, the availability of them in Brazil, the technological aspects of production in small scale in some regions of the country, seem to be sufficient reasons to adopt the semi-solid fermentation process for Bacillus thuringiensis production.