

Evaluation of Filamentous Fungi and Inducers for the Production of Endo-Polygalacturonase by Solid State Fermentation

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Z. Naturforsch. **57c**, 666–670 (2002); received February 28/April 11, 2002

Pectinase, Endo-polygalacturonase, Solid State Fermentation

Five strains of filamentous fungi (*Aspergillus niger* strains NRRL 3122 and T0005007-2, *Aspergillus oryzae* CCT 3940, *Aspergillus awamori* NRRL 3112 and a *Trichoderma* sp.) were compared for their capacity to produce endo-polygalacturonase (endo-PG) in solid state fermentation. Maximum pectinolytic activity was reached in 72 h of growth, the best two fungal strains being *A. niger* T0005007-2 and *A. oryzae* CCT 3940. Three types of commercial purified pectin and four of unprocessed pectin (tangerine, orange, Tahiti lime and sweet lime rind) were used to assess the effect of pectin on the production of endo-PG by *A. niger* T0005007-2. Maximum pectinolytic activity was achieved using 6 and 10% (w/w) of purified pectin as inducer. Depending on the origin of the commercial pectin used as inducer, maximum endo-PG levels varied from 223 to 876 units per gram of dry medium (one endo-PG unit (U) was defined as the quantity of enzyme which caused a reduction in viscosity of 50% in a 1% w/v solution of pectin in 30 min), indicating that care should be taken when choosing this component of the medium. When the crude pectins were used as inducers at the same concentration as purified pectin, maximum endo-PG activities were 250–300 units/g. However, by increasing the amount of Tahiti lime rind to 50% (w/w) maximum endo-PG was 919 U/g, thus opening up the possibility of a low cost medium for endo-PG production.