

a-L-Arabinofuranosidase Production by *Penicillium janczewskii* in Different Industrial Residues

Temer, B., Terrasan, C.R.F., Knob, A. Carmona, E.C.

Biochemical and Microbiology Department, Biosciences Institute, São Paulo State University, Rio Claro - SP, Brazil.

a-L-arabinofuranosidase is an enzyme that assists vegetal material degradation by removing the L-arabinofuranosil residues in the plant cell wall. This enzyme, individually or combined with others, represents a promising biotechnological tool when applied in industrial processes such as: pulp whitening, oligosaccharides synthesis, second generation ethanol production and also in bread, juice or wine production. Carbon source is the main factor influencing enzyme production once it also provides inducing compounds of the enzyme production by microorganisms. *Penicillium janczewskii* was previously screened as xylanolytic fungus and the production of its xylanase and β -xylosidase have been studied. It was grown in the presence of different agricultural or agro-industrial residues, with the aim to establish the best substrate to induce efficient synthesis and release of a-L-arabinofuranosidase. The highest levels of the enzymatic activity were observed in cultures with brewer's spent grain (BSG) and orange bagasse. These carbon sources were assayed in different concentrations and also in a mixture. Orange bagasse (3%), BSG (3%) and the mixture of BSG and orange bagasse (1% + 1%) provided the highest levels of activity with values of 0.51, 0.63, 0.69 U/mL, respectively. These activities were similar to that observed when the fungus was grown in oat spelts xylan at 1% concentration (0.80 U/mL). *P. janczewskii* presented a considerable production of a-L-arabinofuranosidase in the presence of these residues and their concentration is important since the production of this enzyme was three times higher than that initially observed at 1%. Other physicochemical parameters such as pH of culture medium, temperature and period of cultivation must be evaluated in order to obtain higher levels of enzyme production.

Keywords: a-L-arabinofuranosidase, enzyme production, *Penicillium janczewskii*.

