

TITLE: TIME-COURSE PROFILE OF GROWTH AND XYLANASE PRODUCTION BY *B. AMYLOLIQUEFACIENS*

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ABSTRACT:

Microorganisms such as bacteria, fungi, and yeast are able to produce enzymes of wide applicability. The xylanase is one of these enzymes and it has been extensively studied. Due to its wide range of applications, the xylanase is an enzyme of interest to several industrial sectors, such as food industry, textile, biofuel industry and so on. To ensure the enzymatic process efficiency it is necessary to know the best conditions to the enzymatic production. This study aimed to find the best incubation time and substrate concentration to maximizing the enzymatic production of xylanase from *Bacillus amyloliquefaciens* VR 002. We observed the time-course profile of growth and xylanase production by *B. amyloliquefacies* in mineral growth medium with 0.5, 1.0 e 1.5% of xylan, at pH 7, under stirring of 150 rpm, incubated at a temperature of 35°C, taking daily samples during incubation intervals of 24 to 96h. Extracellular xylanase activity were assayed by measuring the released reducing sugars formed by enzymatic hydrolysis of xylan. The quantification of the reducing sugars released was done according to the DNS method developed by Miller (1959), using calibration curve of D-xylose. One unit (U) of xylanase activity was defined as the amount of enzyme that released 1 μ M of reducing sugars equivalent to D-xylose per min. The bacterial growth was assayed through reading optical density at 600nm. From 24h, xylanase activity and bacterial growth have increased, with maximum bacterial growth (DO_{600nm} 9,675) and enzymatic activity ($0.79\pm 0,05$ U.ml⁻¹) observed at 48h, in growth medium with 1.0% of xylan. From 48h, xylanase activity and bacterial growth have slightly diminished, with minimum bacterial growth (DO_{600nm} 4,325) and enzymatic activity ($0.63\pm 0,05$ U.ml⁻¹) observed at 96h, in growth medium with 0.5% of xylan. Therefore, the results indicate that the best incubation time and substrate concentration to xylanase production were 48h and 1.0% of xylan.

KEYWORDS: xylanase, bacillus amyloliquefaciens, enzyme, xylan