



## STREPTOCOCCUS INFANTARIUS ISOLATED FROM POZOL SHOWS XYLANASE ACTIVITY

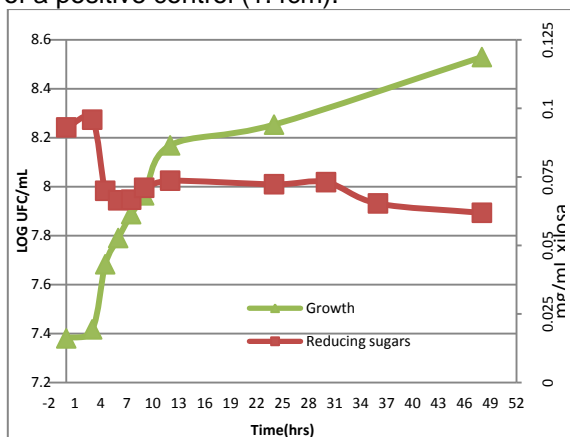
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**Introduction.** *Streptococcus infantarius* is a lactic acid bacterium (LAB) that has been isolated from pozol, a traditional acidic beverage from South Eastern Mexico, made with fermented coarse ground nixtamal. In previous studies it has been demonstrated to have amylolytic activity (1). Xylan is the second carbon source of importance in pozol's maize dough. The aim of this work was to demonstrate that *Streptococcus infantarius* actually consumes xylan during pozol fermentation.

**Methods.** A semiquantitative xylanase assay was performed using lugol flooding plate technique, measuring the clearance halo after 3 days of incubating at 28°C. Fermentation was made in fresh HSH broth (2), a defined medium, with 1% xylan from birchwood (Sigma) at 28°C. Growth was measured by plate count, reducing sugars by DNS method (3) and total sugars by Phenol sulphuric acid technique. Xylanase activity was measured according to Rickard et al. (4) with 1% xylan as substrate and the test was made against a xylanolytic bacteria (*Cellulomonas flavigena*).

**Results.** The clearance halos produced by *S. infantarius* were 2.43 cm average, indicating that there is strong activity compared to those of a positive control (1.4cm).



**Fig.1** Growth and reducing sugars of *Streptococcus infantarius* in 1% xylan

*S. infantarius* reached its log phase of growth after 3 hrs of incubation at 28°C and had a  $\mu=0.1468 \text{ hr}^{-1}$ ; it increased its population in one logarithmic unit in 12 hrs (Figure 1). Parallel growth on HSH-glucose, but not on HSH medium without carbon source were made to demonstrate that xylan was being used by the microorganism (data not shown). Reducing sugars expressed as mg/mL of xylose were reduced from hour 3 in correspondence to the log phase from values of 93  $\mu\text{g/mL}$  to 61.9  $\mu\text{g/mL}$  (Figure1). Total sugars concentration showed a rapid decrease from 4.5 to 6 h, then a continuous decrease along fermentation; in 48 h total sugars concentration varied from 26.32 to 22.94 mg/mL that represents 12.84 % of total sugar consumed. Xylanase activity was 23.485 IU, about 25 % of positive control and specific activity was 1861.29  $\mu\text{mol}$  of liberated xylose  $\text{ml}^{-1} \text{min}^{-1} \text{mg protein}^{-1}$

**Conclusions.** *Streptococcus infantarius* which has been established as a predominant LAB during pozol's fermentation, in addition to its amylolytic activity, is also capable of degrading Xylan and both activities could be the feature that allows it to prevail along fermentation over other bacteria.

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### References

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