



EFFECT OF CULTURE MEDIUM ON THE PRODUCTION OF ENZYMES OF BIOTECHNOLOGICAL INTEREST BY *Pediococcus acidilactici* ATCC8042.

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Introduction. Lactic acid bacteria (LAB) are widely used as starters in fermented foods as they contribute to flavor, aroma and texture development. They are also known for their biopreservation effect due to the production of antibacterial compounds, including enzymes (1). Cell growth and metabolite production are affected by culture conditions, including oxygen supply, source and amount of nutrients (2). When grown in MRS broth, *P. acidilactici* ATCC 8042 produces two lytic proteins, with molecular weights of 99- and 110-kDa (3), a metalloprotease of 80-kDa (4) and an intracellular serin-protease (97-kDa) (5). In the present work, the effect of air supply and culture media on the production of these enzymes by *P. acidilactici* ATCC 8042 is assessed.

Methods. *P. acidilactici* ATCC 8042 was grown in commercial culture media (MRS, APT, CGB, TSB y M17) and either static cultures or agitated ones (250 rpm) were performed. Optical density and pH were recorded every 2 h. Both lytic and protease activity were detected by zymography, using *M. lysodeikticus* and gelatin as substrates, respectively.

Results. Table 1 shows the conditions where lytic or protease activities were detected. Differences in performance are clear as a result of the regulatory effect exerted by nutrients or the amount of dissolved oxygen.

Table 1. Lytic and proteolytic activity of growth cells in different conditions (ND= not detectable).

Medium	Activity band			
	Static		Agitation 250 rpm	
	Lytic	Proteolytic	Lytic	Proteolytic
MRS	97- and 110-kDa	120-kDa	110-kDa	ND
APT	97-kDa	ND	110-kDa	110-kDa
CGB	ND	ND	97- and 110-kDa	ND
TSB	97-kDa	120-kDa	ND	66-kDa
M17	ND	66-kDa	ND	ND

The different behaviors can be noted in Figure 1, which shows the obtained zymograms.

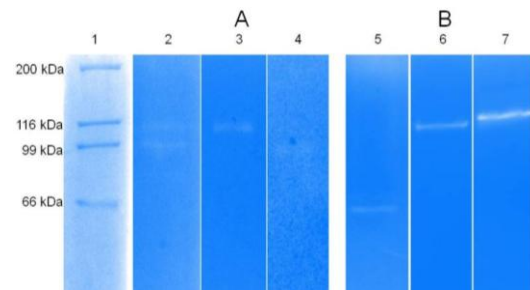


Fig. 1 Zymograms. A) Lytic activity vs *M. lysodeikticus*. B) Proteolytic activity vs gelatin 0.1%. Lane 2, growth cells in MRS broth without stirring; lane 3, growth cells in MRS broth with stirring; lane 4, growth cells in APT broth with stirring; lane 5, growth cell in TSB broth with stirring; lane 6, growth cells in APT broth with stirring; lane 7, growth cells in MRS broth without stirring.

Conclusions. The production of the relevant enzymes depends on the nutrients used and growth conditions. The scarce knowledge on the proteolytic system of this microorganism, and the absence of evidence about the effect of the proteolytic enzymes on the antibacterial effect of the strain reported elsewhere (5) indicate that more studies need to be performed to obtain the desired combination of enzymes with the highest antimicrobial effect or those that have a more important role in flavor or texture development in fermented products.

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