Optimisation of cheese whey enzymatic hydrolysis and further continuous production of antimicrobial extracts by *Lactobacillus plantarum* CECT-221

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The enzymatic hydrolysis of cheese whey was optimised using the enzymes iZyme, Alcalase or Flavourzyme under different conditions. Hydrolysates supplemented with commercial nutrients were evaluated as fermentation broths to produce DL-3-Phenyllactic acid (PLA) by *Lactobacillus plantarum* CECT-221. Optimised hydrolysates were obtained using Flavourzyme at 50ºC and 100 rpm during 12h, and assayed in 250 mL Erlenemyer flasks using different proportions of vinasses as economic nutrient. The process was then assayed in continuous using a 2L Bioreactor. The optimal condition was selected at the intermediate flow rate of 0.62 mL/min producing 0.81 mM of PLA (Q_{PLA} = 0.003 g/L·h; Q_{Phe} = 0.008 g/L·h; and $Y_{PLA/Phe}$ = 0.36 g/g) and 38.8 g/L of lactic acid (Q_{LA} = 1.599 g/L·h; $Q_{lactose}$ = 1.859 g/L·h; and $Y_{LA/lactose}$ = 0.86 g/g). A final evaluation revealed that lactic acid exerted the higher inhibitory effect among the extracted components of cell-free supernatants.