

## **Aqueous two-phase flotation for primary recovery of bacteriocin-like inhibitory substance (BLIS) from *Pediococcus acidilactici* Kp10**

### **ABSTRACT**

An aqueous two-phase flotation (ATPF) system based on polyethylene glycol (PEG) and sodium citrate ( $\text{NaNO}_3\text{C}_6\text{H}_5\text{O}_7 \cdot 2\text{H}_2\text{O}$ ) was considered for primary recovery of bacteriocin-like inhibitory substance (BLIS) from *Pediococcus acidilactici* Kp10. The effects of ATPF parameters namely phase composition, tie-line length (TLL), volume ratio between the two phases (VR), amount of crude load (CL), pH, nitrogen gas flow rate (FR) and flotation time (FT) on the performance of recovery were evaluated. BLIS was mainly concentrated into the upper PEG-rich phase in all systems tested so far. The optimum conditions for BLIS purification, which composed of PEG 8000/sodium citrate, were: TLL of 42.6, VR of 0.4, CL of 22% (w/w), pH 7, average FT of 30min and FR of 20mL/min. BLIS was partially purified up to 5.9-fold with a separation efficiency of 99% under this optimal conditions. A maximum yield of BLIS activity of about 70.3% was recovered in the PEG phase. The BLIS from the top phase was successfully recovered with a single band in SDS-gel with molecular weight of about 10-15kDa. ATPF was found to be an effective technique for the recovery of BLIS from the fermentation broth of *P. acidilactici* Kp10.

**Keyword:** Aqueous two-phase flotation; Bacteriocin-like inhibitory substance; *Pediococcus acidilactici* Kp10; Polyethylene glycol; Purification