

## Screening and selection of lactic acid bacteria for EPS production

B. Karna<sup>1</sup>, D. Otieno<sup>1</sup>, N.P. Shah<sup>1,2</sup>, I.B. Powell<sup>3</sup>, V. Mishra<sup>1</sup>

<sup>1</sup>College of Health and Biomedicine, Victoria University, Melbourne, Victoria 8001, Australia

<sup>2</sup>University of Hong Kong, Pokfulam Road, Hong Kong (current address)

<sup>3</sup>Dairy Innovation Australia Limited, 180 Princes Highway, Werribee, Victoria 3030, Australia

Exopolysaccharides (EPS) synthesized by lactic acid bacteria (LAB) play an important role in stabilizing and enhancing the viscosity and water binding properties of fermented dairy products and also contribute to the mouth-feel, texture and taste perception of those products. Seventeen LAB strains grown in 10% (w/v) reconstituted skim milk were examined by Gram staining and capsule determination using India ink stain and laser confocal microscopy. Under microscopy, all strains showed capsular EPS, and *Streptococcus thermophilus* ASCC1275 showed evidence of both capsular and non-capsular EPS. *Streptococcus thermophilus* ST 5 showed highest viscosity (756.3 cps) and ASCC486 showed lowest (36.0 cps). Three methods, using conventional dialysis, ultrafiltration and centrifugal filtration, were compared for EPS purification. The ultrafiltration method (EPS estimation 159 - 391 mg/L) gave generally higher estimates of EPS, compared to centrifugal filtration (76 - 332 mg/L) and conventional dialysis (78 - 380 mg/L), and results correlated poorly ( $R^2$  values between method results were 0.47, 0.57 and 0.64). Four strains showing high EPS production (*S. thermophilus* ASCC1275 and ASCC753, *Lactobacillus delbrueckii* ssp. *bulgaricus* ASCC1092 and ASCC840) are under further investigation for potential improvement of fermented dairy products.