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Genomic insights into high exopolysaccharide-producing dairy starter bacterium *Streptococcus thermophilus* ASCC 1275

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Streptococcus thermophilus is an essential dairy starter for the manufacture of yogurt and cheese. Whole-genome sequencing of this organism is expected to provide insights into the genetic basis of metabolic pathways for biotechnological and probiotic applications.

Streptococcus thermophilus ASCC 1275, a high EPS-producing dairy starter, has shown texture-enhancing properties for yogurt and cheese. After genomic DNA extraction using CTAB/NaCl method, whole genome sequencing including one shot-gun sequencing, two extra paired-end sequencing and Sanger sequencing was performed for strain

Streptococcus thermophilus ASCC 1275 to obtain estimated 10× coverage of the genome. The raw reads were *de novo* assembled using Newbler 2.7. The genome was annotated by NCBI Prokaryotic Genomes Annotation Pipeline (PGAAP) and was compared against two other sequenced strains of *S. thermophilus* ND03 and MN-ZLW-002. Common features shared by *S. thermophilus* strains, such as efficient proto-cooperation with *Lactobacillus delbrueckii* subsp. *bulgaricus*, lactate production, well-equipped acid tolerance and proteolytic activity may account for dairy fermentation. Specific physiological properties of ASCC 1275, such as unique EPS synthesis and assembly, folic acid biosynthesis and CRISPR/Cas system against phage infection might benefit industrial fermentation processes. This study highlights the specific biosynthesis pathway for EPS production for the strain *Streptococcus thermophilus* ASCC 1275.