

**KARAKTERISTIK KIMIA, FISIK, SENSORIS, DAN MIKROBIOLOGIS
KEJU TOMME PROBIOTIK DENGAN KULTUR STARTER LOKAL
Lactobacillus plantarum DAD-13 DAN *Streptococcus thermophilus* DAD-11**

INTISARI

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Keju tomme berpotensi menjadi produk keju probiotik dengan penambahan bakteri probiotik *Lactobacillus plantarum* Dad-13 yang dikombinasikan dengan *Streptococcus thermophilus* Dad-11. Magang industri ini bertujuan untuk mengembangkan isolat *Lactobacillus plantarum* Dad-13 dan *Streptococcus thermophilus* Dad-11 sebagai kultur starter campuran lokal serta mengetahui karakteristik kimia, fisik, sensoris, dan viabilitas sel antara keju tomme yang dibuat menggunakan kultur starter campuran lokal dengan keju tomme yang dibuat menggunakan kultur starter impor komersial (MA4002).

Keju tomme dibuat menggunakan susu, garam, enzim rennet, dan kultur starter. Faktor yang digunakan adalah perbedaan kultur starter meliputi kultur starter campuran lokal (*Lactobacillus plantarum* Dad-13 dan *Streptococcus thermophilus* Dad-11) dan kultur starter impor komersial (MA4002). Sampel dilakukan pengujian pH, *yield*, kadar air bahan tanpa lemak, kadar lemak, kadar protein, kadar karbohidrat, *hardness*, *cohesiveness*, *chewiness*, sifat sensoris dengan metode hedonik, dan viabilitas sel.

Hasil penelitian menunjukkan bahwa kultur starter campuran lokal dapat digunakan sebagai kultur starter pembuatan keju tomme. Keju tomme dengan kultur campuran memiliki pH produk akhir $5,07 \pm 0,08$, *yield* $8,09 \pm 0,07\%$, kadar air bahan tanpa lemak $45,15 \pm 1,74\%$, kadar lemak $46,90 \pm 2,95\%$, kadar protein $32,99 \pm 0,35\%$, kadar karbohidrat $9,21 \pm 2,18\%$, *hardness* $98,12 \pm 12,13$ N, *cohesiveness* $0,41 \pm 0,11$, *chewiness* $52 \pm 10,48$ N, dan kesukaan *overall* produk $5 \pm 1,30$. Viabilitas sel *Lactobacillus plantarum* Dad-13 pada keju tomme yang dibuat menggunakan kultur starter *Lactobacillus plantarum* Dad-13 dan *Streptococcus thermophilus* Dad-11 sebesar $6,6 \times 10^7$ CFU/g setelah empat minggu penyimpanan pada suhu 4°C yang memenuhi syarat produk probiotik.

Kata kunci: keju tomme, kultur starter, probiotik, *Lactobacillus plantarum* Dad-13, dan *Streptococcus thermophilus* Dad-11

**CHEMICAL, PHYSICAL, SENSORY, AND MICROBIOLOGICAL
CHARACTERISTICS OF PROBIOTIC TOMME CHEESE WITH LOCAL
STARTER CULTURES *Lactobacillus plantarum* DAD-13 AND *Streptococcus
thermophilus* DAD-11**

ABSTRACT

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Tomme cheese has the potential to become a probiotic cheese product with the addition of the probiotic bacteria *Lactobacillus plantarum* Dad-13 combined with *Streptococcus thermophilus* Dad-11. This industrial internship aims to develop isolates of *Lactobacillus plantarum* Dad-13 and *Streptococcus thermophilus* Dad-11 as a local mixed starter culture and to determine the chemical, physical, sensory, and cell viability characteristics between tomme cheese made using local mixed starter culture and tomme cheese made using a commercially imported starter culture (MA4002).

Tomme cheese is made using milk, salt, rennet enzymes and starter culture. The factors used are different starter cultures including local mixed starter cultures (*Lactobacillus plantarum* Dad-13 and *Streptococcus thermophilus* Dad-11) and imported commercial starter cultures (MA4002). The samples were tested for pH, yield, moisture content of lean material, fat content, protein content, carbohydrate content, hardness, cohesiveness, chewiness, sensory properties using the hedonic method, and cell viability.

The results showed that local mixed starter cultures could be used as starter cultures for tomme cheese making. Tomme cheese with mixed culture had a final product pH of 5.07 ± 0.08 , yield $8.09 \pm 0.07\%$, moisture-in-nonfat substances (MNFS) $45.15 \pm 1.74\%$, fat content $46.90 \pm 2.95\%$, protein content $32.99 \pm 0.35\%$, carbohydrate content $9.21 \pm 2.18\%$, hardness 98.12 ± 12.13 N, cohesiveness 0.41 ± 0.11 , chewiness 52 ± 10.48 N, and overall preference product 5 ± 1.30 . Cell viability of *Lactobacillus plantarum* Dad-13 in tomme cheese made using starter cultures of *Lactobacillus plantarum* Dad-13 and *Streptococcus thermophilus* Dad-11 was 6.6×10^7 CFU/g after four weeks of storage at 4°C which met the requirements for probiotic products.

Keyword: tomme cheese, *starter culture*, *probiotic*, *Lactobacillus plantarum* Dad-13, and *Streptococcus thermophilus* Dad-11