

INTISARI

Yogurt merupakan pangan fungsional yang terbuat dari susu fermentasi dan mengandung *Lactobacillus bulgaricus* dan *Streptococcus thermophilus* sebagai kultur starter dan bakteri asam laktat lain yang sesuai. *Lactiplantibacillus plantarum* subsp. *plantarum* Dad-13 yang diisolasi dari susu kerbau tradisional dapat ditambahkan dalam yogurt untuk menambah manfaatnya. Pada penelitian ini, susu dalam *yogurt drink* dimodifikasi dengan menggunakan susu rendah laktosa agar dapat dinikmati oleh orang dengan intoleransi laktosa. Pada penelitian ini, diamati pertumbuhan BAL, sifat fisikokimia dan sensoris dari yogurt drink rendah laktosa dengan penambahan *Lactiplantibacillus plantarum* subsp. *plantarum* Dad-13.

Fermentasi susu rendah laktosa dilakukan pada suhu yang berbeda (37°C, 39°C, 42°C) untuk menentukan suhu fermentasi optimum untuk mengetahui pertumbuhan Bakteri Asam Laktat dan nilai pH. Kemudian, yogurt base hasil fermentasi dicampur dengan larutan gula menjadi yogurt drink, dan disimpan pada suhu 4°C selama 35 hari. Yogurt drink diamati setiap 7 hari untuk diamati viabilitas, pH, total asam tertitrasi, viskositas, dan warna. Uji sensoris dilakukan pada 60 panelis.

Lactiplantibacillus plantarum subsp. *plantarum* Dad-13 yang ditambahkan pada kultur yogurt pada suhu yang berbeda diketahui mampu tumbuh dengan baik. Kondisi optimal untuk pertumbuhan Bakteri Asam Laktat dan Probiotik ialah suhu 37 °C dengan pertumbuhan sebesar 7,64-8,96 Log CFU/mL selama 36 jam dengan nilai pH 6,42 hingga 4,22. Viabilitas *L. plantarum* selama penyimpanan adalah 7,79 Log CFU/mL selama 35 hari. Selanjutnya, perbedaan signifikan diamati pada nilai pH penyimpanan, perubahan warna, dan evaluasi sensoris ($p < 0,05$). Formulasi *yogurt drink* rendah laktosa dengan probiotik merupakan yang paling disukai oleh panelis dari segi aroma, viskositas, aseptabilitas dan rasanya dibanding dengan yogurt drink rendah laktosa.

Kata kunci: *L. plantarum* Dad-13, Low-lactose, Probiotic, Yogurt Drink

ABSTRACT

Background and Objective: Yogurt is a functional food made from fermented milk that contains *Lactobacillus bulgaricus* and *Streptococcus thermophilus* as its primary cultures, along with other suitable lactic acid bacteria. In this study, low-lactose milk was used to produce yogurt drinks that are suitable for people with lactose intolerance. During the production process, a probiotic, such as *Lactiplantibacillus plantarum* subsp. *plantarum* Dad-13, which was isolated from traditional buffalo milk, was added to the yogurt drink to enhance its benefits. Therefore, the aim of this study is to investigate the growth of lactic acid bacteria, as well as the physicochemical and sensory properties of low-lactose yogurt drinks by adding *Lactiplantibacillus plantarum* subsp. *plantarum* Dad-13.

Material and Methods: Low-lactose milk, along with the addition of probiotics, was used in the fermentation process of yogurt. The process was conducted at various temperatures of 37°C, 39°C, and 42°C to investigate the growth of lactic acid bacteria and pH value. Subsequently, the selected low-lactose milk was processed to obtain yogurt drink, which was then stored at 4°C for 35 days. During the storage period, the drink was monitored weekly to evaluate its number, appearance, viscosity, pH, and color. Additionally, a sensory evaluation was performed on 60 panelists.

Results and Conclusion: *Lactiplantibacillus plantarum* subsp. *plantarum* Dad-13 exhibited significant growth at various fermentation temperatures of 37°C, 39°C, and 42°C when cultured with yogurt. The optimal condition for the growth of both lactic acid bacteria and probiotics was at 37°C, resulting in a cell number of 7.64-8.96 Log CFU/mL over 36 hours and a pH value of 6.42 to 4.22. During the 35-day storage period, the cell viability of *L. plantarum* was 7.79 Log CFU/mL. Furthermore, significant differences were observed in the pH value, color change, and sensory evaluation ($p < 0.05$). Therefore, the formulation of low-lactose probiotic yogurt drink was preferred by the panelists due to its excellent odor, viscosity, acceptability, and taste compared to its low-lactose counterpart.

Key words: *L. plantarum* Dad-13, Low-lactose, Probiotic, Yogurt Drink