

UJI EFEKTIVITAS YOGHURT *SINGLE* DAN *DOUBLE STRAIN* DALAM MENGHAMBAT BAKTERI *Salmonella typhi* PENYEBAB DEMAM TIFOID

ABSTRAK

Latar belakang: *Salmonella typhi* adalah bakteri gram negatif penyebab demam tifoid. Penyakit ini dapat dicegah dengan mengonsumsi makanan fermentasi yang mengandung bakteri asam laktat (BAL). Yoghurt merupakan salah satu produk olahan hasil fermentasi BAL dengan bahan dasar susu. BAL yang digunakan dalam pembuatan yoghurt adalah *single strain Lactobacillus bulgaricus*, *Streptococcus thermophilus* serta *double strain Lactobacillus bulgaricus* dan *Streptococcus thermophilus*.

Tujuan: Penelitian ini bertujuan untuk mengetahui perbandingan BAL yoghurt *single strain* dengan *double strain* dalam menghambat pertumbuhan *Salmonella typhi* dengan menghitung rata-rata zona hambat yang terbentuk.

Metode: Metode penelitian ini adalah *experimental design* dengan *post test only with control group design*. Pengujian bakteri menggunakan difusi sumuran. Total sampel sebanyak 12 sampel dibagi menjadi 4 kelompok konsentrasi masing-masing 0%, 20%, 40%, 60%, dan 80%. Rancangan percobaan pada penelitian ini menggunakan metode Rancangan Acak Lengkap (RAL). Analisis data menggunakan uji *Kruskal Wallis* dan *Post Hoc Mann Whitney*.

Hasil: Hasil penelitian didapatkan median diameter zona hambat BAL yoghurt *double strain Streptococcus thermophilus* dan *Lactobacillus bulgaricus* > *single strain Lactobacillus bulgaricus* > *Streptococcus thermophilus*. Pada uji *Kruskal Wallis* didapatkan nilai $p = 0,000$, terdapat perbedaan antara kelompok yang diberi perlakuan dan tidak diberi perlakuan. Hasil uji penelitian didapatkan perbedaan signifikan median diameter zona hambat antar kelompok.

Kesimpulan: Kesimpulan dari penelitian ini menunjukkan bahwa yoghurt *double strain* memiliki kemampuan penghambatan pertumbuhan *Salmonella typhi* yang lebih baik dibandingkan yoghurt *single strain Lactobacillus Bulgaricus* atau *Streptococcus thermophilus*.

Kata kunci : *Streptococcus thermophilus*, *Lactobacillus bulgaricus*, *Salmonella typhi*, Bakteri Asam Laktat, Demam Tifoid

**EFFECTIVENESS TESTING OF SINGLE AND DOUBLE STRAIN
YOGHURT IN INHIBITTING TYPHOID FEVER CAUSING *Salmonella typhi*
BACTERIA**

ABSTRACT

Background: *Salmonella typhi* is a negative gram bacterium that is the cause of typhoid fever. This disease can be prevented by consuming fermented produce containing lactic acid bacteria (LAB). Yoghurt is one such produce made from LAB fermentation with milk being its main ingredient. The LAB used to make yoghurt is the single strain *Lactobacillus bulgaricus*, *Streptococcus thermophilus*, and the double strain *Lactobacillus bulgaricus* and *Streptococcus thermophilus*.

Objective: This research's purpose is to find out the comparison between the LAB of single strain yoghurt and that of the double strain in terms of inhibiting the growth of *Salmonella typhi* by measuring the average zone of inhibition they formed.

Method: The method used in this research is the experimental design with post test only with control group design. Testing of bacteria in this study uses the well diffusion method. There were 12 samples in total, divided into 4 groups with 0%, 20%, 40%, 60%, and 80% concentration respectively as control. The experimental design in this study used the Completely Randomized Design (CRD) method. The Kruskal Wallis test and Mann Whitney Post Hoc test were used to analyze the data.

Result: The results showed that the median of the LAB inhibition zone for the double strain of *Streptococcus thermophilus* and *Lactobacillus bulgaricus* > single strain *Lactobacillus bulgaricus* > *Streptococcus thermophilus*. In the Kruskal Wallis test, the p value obtained was 0.000, meaning the treated and the untreated groups differed. Results showed significant difference between each group regarding the median diameter of each of their LAB inhibition zone.

Conclusion: This study concluded that yoghurt made with double strain *S. thermophilus* and *Lactobacillus bulgaricus* are better at inhibiting the growth of *Salmonella typhi* compared to the one made with the single strain *Streptococcus thermophilus* and *Lactobacillus bulgaricus*.

Keywords : *Streptococcus thermophilus*, *Lactobacillus bulgaricus*, *Salmonella typhi*, Lactic Acid Bacteria, Typhoid Fever