

**STUDI KEAMANAN KANDIDAT PROBIOTIK LOKAL *Lactiplantibacillus*  
*plantarum* subsp. *plantarum* T-3 MENGGUNAKAN TIKUS *SPRAGUE*  
*DAWLEY***

**INTISARI**

Keamanan kandidat probiotik yang ditujukan untuk konsumsi merupakan aspek penting dalam kesehatan dan perlu di evaluasi. *Lactiplantibacillus plantarum* subsp. *plantarum* T-3 merupakan kandidat probiotik potensial diisolasi dari *growol* (makanan tradisional terfermentasi dari singkong) dari Jawa, Indonesia. Penelitian ini bertujuan untuk mengevaluasi keamanan *L. plantarum* subsp. *plantarum* T-3 menggunakan tikus *Sprague Dawley* dengan konsumsi dosis tinggi ( $10^{11}$  CFU/hari) selama 28 hari. Sebanyak 18 tikus dibagi dalam 3 kelompok yaitu: kontrol (P.0), susu skim (P.1), dan probiotik (P.2). Adaptasi dilakukan selama 7 hari, diikuti 28 hari perlakuan. Hasil percobaan menunjukkan bahwa konsumsi dosis tinggi *L. plantarum* subsp. *plantarum* T-3 tidak memiliki dampak merugikan pada kondisi umum, berat organ, profil darah, dan parameter histologi dari hewan coba. Konsumsi pakan, berat badan, berat organ, SGPT, SGOT, dan parameter histologi tidak menunjukkan perbedaan signifikan antar kelompok. Perbaikan hemoglobin darah terjadi pada kelompok probiotik dibandingkan dengan kontrol serta masih dalam taraf normal referensi. Peningkatan populasi *L. plantarum* pada feses dan digesta tikus perlakuan mengindikasikan *L. plantarum* subsp. *plantarum* T-3 mampu bertahan melewati saluran pencernaan. Kemampuan translokasi dari *L. plantarum* subsp. *plantarum* T-3 tidak terdeteksi pada darah dan organ, yang dikonfirmasi dengan *rep*-PCR primer BOXA1R dilanjutkan sekuensing 16S rRNA. Isolat asal darah dan organ tidak ditemukan adanya isolat yang identik dengan *L. plantarum* subsp. *plantarum* T-3. Meskipun penelitian ini masih terbatas pada penggunaan hewan coba, hasil penelitian diharapkan mampu menunjukkan bahwa *L. plantarum* subsp. *plantarum* T-3 dikategorikan aman dan berpotensi sebagai probiotik berdasarkan ulasan parameter diatas.

**Kata kunci:** Evaluasi keamanan, *in vivo*, bakteremia, probiotik, *Lactiplantibacillus plantarum*.

## Safety evaluation of indigenous probiotic strain *Lactiplantibacillus plantarum* subsp. *plantarum* T-3 using Sprague Dawley rats as a model

### ABSTRACT

The safety of new probiotic for consumption is vital for public health and necessary to be assessed. *Lactiplantibacillus plantarum* subsp. *plantarum* T-3 is a new potential probiotic strain isolated from *growol*, traditional fermented cassava from Java, Indonesia. This study aimed to evaluate the safety aspects of *L. plantarum* subsp. *plantarum* T-3 on Sprague Dawley rats for 28 days at high dose consumption ( $10^{11}$ CFU/ml/day). Eighteen rats were randomly divided into three groups: control group (P.0), skim milk group (P.1) and probiotic group (P.2). Adaptation phase was done for seven days, followed by the treatment phase for 28 days. The result showed that high dose consumption of *L. plantarum* subsp. *plantarum* T-3 did not have a detrimental effect on general health, organ weight, hematology, and histology parameters of treated rats. Feed intake, body weight, organ weight, SGOT, SGPT, and histological parameters also showed no significant difference between groups. The haemoglobin level was increased in the probiotic group compared to the control and meet the normal range value from the reference. An increased population of *L. plantarum* in fecal and digesta of treated rats also indicate that *L. plantarum* subsp. *plantarum* T-3 survives in the gastrointestinal tract. The possibility of bacterial translocation of *L. plantarum* subsp. *plantarum* T-3 was not detected in the blood and organ, as confirmed by rep-PCR with BOXA1R primer and further 16S rRNA gene sequencing analysis. Isolates obtained from blood and organ were found that none of them was identical to *L. plantarum* subsp. *plantarum* T-3. Although this was limited to animal study, this finding demonstrates that *L. plantarum* subsp. *plantarum* T-3 is considered safe and a potential probiotic for human use according to the abovementioned parameters.

**Keywords:** Safety assessment, *in vivo*, bacteremia, probiotic, *Lactiplantibacillus plantarum*