

**PENGARUH MIKROENKAPSULASI MALTODEKSTRIN DENGAN  
PENGERINGAN OVEN TERHADAP VIABILITAS STARTER  
BAKTERI *Limosilactobacillus fermentum* BN21 YANG  
DITUMBUHKAN PADA TEPUNG UBI KUNING**

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**INTISARI**

Penelitian ini bertujuan untuk mengetahui pengaruh mikroenkapsulasi dengan maltodekstrin terhadap viabilitas bakteri asam laktat *Limosilactobacillus fermentum* BN21 yang ditumbuhkan pada *Solid-State-Fermentation* (SSF) tepung ubi kuning berkadar air 40% yang dikeringkan dengan oven. Pengeringan dilakukan pada suhu 40°C selama 24 jam. Sebelum proses pengeringan dua perlakuan diberikan pada SSF yaitu penambahan maltodekstrin (20%) dan tanpa penambahan maltodekstrin. Replikasi setiap perlakuan sebanyak empat replikasi. Parameter penelitian yang diamati yaitu total koloni bakteri asam laktat, *yield* viabel, kadar asam laktat, angka asam, dan pH. Data total koloni dianalisis menggunakan *software* SPSS dengan analisis variansi rancangan acak lengkap pola searah dan dilanjutkan uji *Duncan's Multiple Range Test* (DMRT). Uji *independent t-test* dilakukan untuk data *yield*, kadar asam laktat, angka asam, dan pH. Hasil penelitian menunjukkan bahwa mikroenkapsulasi mampu mempertahankan viabilitas bakteri selama proses pengeringan oven ( $P < 0,01$ ). *Total Plate Count* sebelum pengeringan rata-rata  $9,21 \pm 0,15$  log CFU/g, sesudah pengeringan dengan mikroenkapsulasi rata-rata  $9,13 \pm 0,13$  log CFU/g, tanpa mikroenkapsulasi rata-rata  $3,73 \pm 0,05$  log CFU/g. *Yield* viabel starter kering pada perlakuan mikroenkapsulasi rata-rata  $78,34 \pm 1,41\%$  lebih tinggi dibanding tanpa mikroenkapsulasi rata-rata  $27,45 \pm 0,69\%$ . Mikroenkapsulasi mempengaruhi parameter fermentasi ( $P < 0,01$ ). Kadar asam laktat mikroenkapsulasi dan tanpa mikroenkapsulasi adalah  $7,72 \pm 0,04$  mg/ml dan  $4,08 \pm 0,06$ , angka asam  $49,60 \pm 7,27$  mg/ml dan  $29,60 \pm 5,02$  mg/ml, pH  $4,51 \pm 0,08$  dan  $4,73 \pm 0,07$ . Mikroenkapsulasi dengan maltodekstrin pada pengeringan oven *Limosilactobacillus fermentum* BN21 dapat mempertahankan viabilitas bakteri sebagai starter dan meningkatkan *yield* viabel, kadar asam laktat, angka asam, serta menurunkan pH.

**Kata Kunci:** bakteri, maltodekstrin, mikroenkapsulasi, pengeringan

**EFFECT OF MALTODEXTRIN MICROENCAPSULATION WITH OVEN DRYING ON THE VIABILITY OF STARTER *Limosilactobacillus fermentum* BN21 GROWN IN YELLOW SWEET POTATO FLOUR**

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**ABSTRACT**

This study aimed to evaluate the effect of maltodextrin microencapsulation on viability of lactic acid bacteria *Limosilactobacillus fermentum* BN21 grown in a Solid-State Fermentation (SSF) medium yellow sweet potato flour with 40% moisture content and dried by oven drying. The drying process was carried out at 40°C for 24 hours. Two treatments were applied before drying: the addition of maltodextrin (20%) and no maltodextrin addition. Each treatment was conducted with four replications. The observed parameters included total colony lactic acid bacteria, yield viable, lactic acid concentration, acid value, and pH. Total colony data were analyzed using SPSS with one-way analysis of variance (ANOVA) and continued with Duncan's Multiple Range Test (DMRT). An independent t-test was conducted for yield viable, lactic acid concentration, acid value, and pH. The results showed that microencapsulation effectively maintained bacterial viability during oven drying ( $P < 0,01$ ). Total plate count before drying was  $9,21 \pm 0,15$  log CFU/g, after drying, the microencapsulated sample retained  $9,13 \pm 0,13$  log CFU/g, without microencapsulation averaged  $3,73 \pm 0,05$  log CFU/g. Yield viable in dry starter yield with microencapsulated treatment ( $78,34 \pm 1,41\%$ ) was higher than yield in the non-microencapsulated treatment ( $27,45 \pm 0,69\%$ ). Microencapsulation influenced the fermentation parameters ( $P < 0,01$ ). Lactic acid concentration of microencapsulation and without microencapsulation were  $7,72 \pm 0,04$  mg/mL and  $4,08 \pm 0,06$  mg/mL, acid value  $49,60 \pm 7,27$  mg/mL and  $29,60 \pm 5,02$  mg/mL, pH  $4,51 \pm 0,08$  and  $4,73 \pm 0,07$ . Microencapsulation with maltodextrin during oven drying of *Limosilactobacillus fermentum* BN21 preserves bacterial viability as a starter culture, enhances yield viable, acid value, lactic acid concentration, and lowers pH.

**Keywords: bacteria, maltodextrin, microencapsulation, drying**