

KUALITAS FISIKO-KIMIA DAN VIABILITAS *LACTICASEIBACILLUS CASEI* AP DAN *PEDIOCOCCUS* *ACIDILACTICI* BE PADA SUSU BUBUK PROBIOTIK DENGAN METODE *FREEZE DRYING*

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INTISARI

Penelitian ini bertujuan untuk mengetahui kualitas fisiko-kimia serta viabilitas *Lactocaseibacillus casei* AP dan *Pediococcus acidilactici* BE dalam susu bubuk probiotik sebelum dan sesudah *freeze drying*. Susu probiotik diproduksi menggunakan susu sapi disuplementasi 6% (w/v) susu skim dan dipasteurisasi pada suhu 80°C selama 30 menit. Kemudian secara terpisah produk susu fermentasi dibuat menjadi susu bubuk dengan metode *freeze drying*. Data pengujian kualitas fisik *wettability* dan *insolubility index* dianalisis menggunakan metode *One-way ANOVA* dan hasil analisis yang menunjukkan adanya perbedaan signifikan ($P < 0,05$) dianalisis lebih lanjut dengan uji *Duncan's New Multiple Range Test* (DMRT). Data pengujian kualitas kimia meliputi total solid, kadar air, aktivitas air, keasaman, pH, kadar laktosa, kadar lemak, kadar protein, dan viabilitas probiotik dianalisis dengan metode *paired T-test* dengan menggunakan tiga kali ulangan. Hasil analisis menunjukkan bahwa penggunaan kultur bakteri yang berbeda memberikan pengaruh yang signifikan ($P < 0,05$) terhadap *insolubility index*, *wettability*, kadar air, total solid, aktivitas air, pH, keasaman, kadar laktosa, kadar protein, kadar lemak, dan viabilitas probiotik. Hasil penelitian menunjukkan bahwa susu bubuk probiotik dengan *Lactocaseibacillus casei* AP memiliki kualitas fisik lebih baik dibandingkan dengan *Pediococcus acidilactici* BE. Susu bubuk probiotik dengan kultur *Lactocaseibacillus casei* AP dan *Pediococcus acidilactici* BE memiliki kualitas kimia dan viabilitas probiotik yang sesuai dengan Standar Nasional Indonesia.

Kata kunci: *Freeze drying*, kualitas fisiko-kimia, viabilitas, *Lactocaseibacillus casei* AP, *Pediococcus acidilactici* BE, Susu bubuk probiotik

PHYSICO-CHEMICAL QUALITY AND VIABILITY OF *LACTICASEIBACILLUS CASEI* AP AND *PEDIOCOCCUS* *ACIDILACTICI* BE IN PROBIOTIC POWDER PRODUCT USING FREEZE DRYING METHOD

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ABSTRACT

This study aimed to determine the physicochemical quality and viability of *Lacticaseibacillus casei* AP and *Pediococcus acidilactici* BE in probiotic milk powder before and after freeze-drying. The probiotic milk was produced using cow's milk supplemented with 6% (w/v) skim milk and pasteurized at 80°C for 30 minutes. Subsequently, the fermented milk products were separately converted into milk powder using the freeze-drying method. Data on physical quality tests, including wettability and insolubility index, were analyzed using the One-way ANOVA method, and results showing significant differences ($P < 0.05$) were further analyzed using Duncan's New Multiple Range Test (DMRT). Chemical quality test data, including total solids, moisture content, water activity, acidity, pH, lactose content, fat content, protein content and probiotic viability, were analyzed using the paired T-test method with three replications. The results showed that the use of different bacterial cultures had a significant effect ($P < 0.05$) on the insolubility index, wettability, moisture content, total solids, water activity, pH, acidity, lactose content, protein content, fat content, and probiotic viability. The study concluded that probiotic milk powder with *Lacticaseibacillus casei* AP had better physical quality compared to *Pediococcus acidilactici* BE. Probiotic milk powder with *Lacticaseibacillus casei* AP and *Pediococcus acidilactici* BE met the Indonesian National Standard for chemical quality and probiotic viability.

Keywords: Freeze drying, *Lacticaseibacillus casei* AP, *Pediococcus acidilactici* BE, probiotic milk powder, physicochemical quality, viability