

KUALITAS FISIKO-KIMIA DAN VIABILITAS *Pediococcus acidilactici* BE DALAM SUSU BUBUK PROBIOTIK ASAL SUSU SAPI DAN KAMBING

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INTISARI

Penelitian ini bertujuan untuk mengetahui kualitas fisiko-kimia dan viabilitas *Pediococcus acidilactici* BE dalam produk susu bubuk probiotik asal susu sapi dan kambing. Susu bubuk probiotik dibuat dengan menginokulasikan *Pediococcus acidilactici* BE dan dilanjutkan fermentasi pada suhu 42°C selama 6-10 jam kemudian produk dipanen dan dilakukan *spray drying* dengan suhu *inlet* 140°C dan *outlet* 70°C. Parameter kualitas fisik yang diamati yaitu *insolubility index*, *wettability*, dan *sieve test*. Data kualitas fisik susu bubuk probiotik dianalisis menggunakan *One-Way Anova*. Data penelitian dengan hasil berbeda nyata ($P < 0,05$) dilakukan pengujian lanjutan menggunakan uji *Duncan's New Multiple Range Test* (DMRT). Parameter kualitas kimia yang diamati yaitu pH, keasaman, kadar air, *total solid*, aktivitas air, kadar laktosa, protein, dan lemak. Data kadar air, *total solid*, pH, dan keasaman dalam produk susu probiotik dianalisis dengan uji *Paired T-Test*. Data aktivitas air, kadar laktosa, kadar protein, dan kadar lemak pada susu bubuk probiotik dianalisis menggunakan *Independent sample T-Test*. Parameter kualitas mikrobiologi yang diamati yaitu viabilitas *Pediococcus acidilactici* BE. Data kualitas mikrobiologi dianalisis dengan uji *Paired T-Test*. Penggunaan bahan baku susu berbeda berpengaruh nyata ($P < 0,05$) terhadap *insolubility index*, *wettability*, *sieve test*, kadar air, *total solid*, pH, keasaman, laktosa, lemak, dan viabilitas probiotik. Penggunaan bahan baku susu berbeda tidak memberikan pengaruh nyata ($P > 0,05$) terhadap kadar protein. Penggunaan susu kambing pada pembuatan susu bubuk probiotik menghasilkan kualitas fisik yang lebih baik dibandingkan dengan penggunaan susu sapi. Penggunaan susu sapi dalam pembuatan susu bubuk probiotik memiliki kadar air, *total solid*, pH, keasaman, aktivitas air, dan kadar laktosa yang lebih baik dibandingkan dengan penggunaan susu kambing. Penggunaan susu kambing dalam pembuatan susu bubuk probiotik memiliki kadar lemak yang lebih baik dibandingkan dengan penggunaan susu sapi. Kualitas mikrobiologis susu sapi probiotik lebih baik dibandingkan dengan susu kambing probiotik. Total probiotik pada susu bubuk probiotik belum memenuhi syarat yang ditetapkan SNI.

Kata kunci: Kualitas fisiko-kimia, Probiotik, *Pediococcus acidilactici* BE, Susu bubuk, Viabilitas probiotik.

PHYSICO-CHEMICAL QUALITY AND VIABILITY OF *Pediococcus acidilactici* BE IN PROBIOTIC POWDERED MILK PRODUCED USING COW AND GOAT MILK

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ABSTRACT

This study aims to evaluate the physicochemical quality and viability of *Pediococcus acidilactici* BE in probiotic milk powder produced using cow's and goat's milk. Probiotic milk powder was produced by inoculating *Pediococcus acidilactici* BE and then fermentation at 42°C for 6-10 hours. The product was then collected and spray-dried with an inlet temperature of 140°C and an outlet temperature of 70°C. The physical quality parameters observed were insolubility index, wettability, and sieve test. The physical quality data of the probiotic milk powder (insolubility index, wettability, and sieve test) were analyzed using One-Way ANOVA. Data with significant differences ($P < 0.05$) were further tested using Duncan's New Multiple Range Test (DMRT). The chemical quality parameters observed were pH, acidity, moisture content, total solids, water activity, lactose content, protein content, and fat content. Data on moisture content, total solids, pH, and acidity in the probiotic milk powder were analyzed using Paired T-Test. Data on water activity, lactose content, protein content, and fat content in the probiotic milk powder were analyzed using Independent Sample T-Test. The microbiological quality parameter observed was the viability of *Pediococcus acidilactici* BE. The microbiological quality data were analyzed using Paired T-Test. The use of different milk sources had a significant effect ($P < 0.05$) on the insolubility index, wettability, sieve test, moisture content, total solids, pH, acidity, lactose levels, fat levels, and probiotic viability. However, the use of different milk sources did not have a significant effect ($P > 0.05$) on protein levels. The use of goat's milk in making probiotic milk powder produces better physical quality compared to using cow's milk. The use of cow's milk in making probiotic milk powder has better water content, total solids, pH, acidity, water activity and lactose content compared to the use of goat's milk. However, using goat's milk in making probiotic milk powder has a better fat content compared to using cow's milk. The microbiological quality of probiotic cow's milk is better than probiotic goat's milk. However, the total probiotics in probiotic milk powder do not meet the requirements set by SNI.

Keywords: Physicochemical quality, Probiotic, *Pediococcus acidilactici* BE, Powdered milk, Probiotic viability.