

RINGKASAN

Kefir merupakan minuman hasil fermentasi susu oleh grain kefir yang mengandung bakteri asam laktat dan khamir non patogen. Kefir bubuk merupakan hasil pengolahan lanjutan kefir yang melalui pengeringan kemudian pembubukan. Penambahan ekstrak bunga kecombrang dapat meningkatkan nilai gizi dan umur simpan kefir bubuk karena kandungan antioksidannya yang tinggi sebagai antibakteri. Untuk menentukan umur simpan susu bubuk kefir digunakan metode *Accelerated Shelf Life Testing* (ASLT) pendekatan kadar air kritis. Umur simpan juga dipengaruhi oleh jenis kemasan, karena setiap kemasan memiliki sifat dan permeabilitas berbeda. Penelitian ini bertujuan untuk menganalisis umur simpan kefir kecombrang bubuk berdasarkan jenis kemasan, menganalisis pengaruh jenis kemasan terhadap perubahan mutu selama penyimpanan, serta mengidentifikasi jenis kemasan terbaik.

Penelitian ini menggunakan Rancangan Acak Lengkap (RAL) dan metode yang digunakan untuk menduga umur simpan produk minuman instan adalah metode ASLT (*Accelerated Shelf Life Testing*) model kadar air kritis berdasarkan persamaan Labuza. Faktor yang diteliti adalah jenis kemasan yang terdiri atas 5 jenis kemasan yaitu aluminium foil, *High Density Polyethylene* (HDPE), *Low Density Polyethylene* (LDPE), *Polypropylene* (PP), dan *Polyethylene* (PE). Dari hasil pendugaan umur simpan, akan diambil 3 jenis kemasan yang memiliki umur simpan terbaik untuk diamati perubahan mutu selama penyimpanannya. Variabel perubahan mutu yang diamati adalah pH, rehidrasi, total asam tertitrisasi, protein, dan antioksidan. Data umur simpan dan perubahan mutu dianalisis menggunakan *software* SPSS versi 29.

Hasil penelitian menunjukkan bahwa jenis kemasan dapat berpengaruh terhadap umur simpan dan mutu produk kefir kecombrang bubuk. Kemasan aluminium foil memberikan umur simpan 18,4 bulan, kemasan HDPE 8,8 bulan, kemasan LDPE 3 bulan, kemasan PP 15,2 bulan, dan kemasan PE selama 2,3 bulan. Jenis kemasan juga memberikan perlindungan yang berbeda terhadap mutu produk kefir kecombrang bubuk. Aluminium foil menunjukkan perubahan mutu paling kecil selama penyimpanan terlihat pada parameter fisikokimia seperti pH dengan penurunan 6,75%, penurunan waktu rehidrasi 7,61%, kenaikan total asam 10,6%, penurunan protein 16,5%, dan penurunan antioksidan 37,65%. Berdasarkan umur simpan dan perubahan mutunya, kemasan aluminium foil adalah kemasan terbaik yang direkomendasikan untuk produk kefir kecombrang bubuk.

SUMMARY

Kefir is a fermented milk beverage produced by kefir grains that contain lactic acid bacteria and non-pathogenic yeasts. Powdered kefir is a processed product derived from kefir that undergoes drying followed by pulverization. The addition of torch ginger (*Etlingera elatior*) flower extract can enhance the nutritional value and shelf life of powdered kefir due to its high antioxidant content, which also acts as an antibacterial agent. To determine the shelf life of powdered kefir milk, the Accelerated Shelf Life Testing (ASLT) method was used, based on the critical moisture content approach. Shelf life is also influenced by the type of packaging, as each material has different properties and levels of permeability. This study aims to analyze the shelf life of torch ginger powdered kefir based on packaging type, assess the effect of packaging on quality changes during storage, and identify the best packaging material.

This study used a Completely Randomized Design (CRD), and the method applied to estimate the shelf life of the instant beverage product was the Accelerated Shelf Life Testing (ASLT) with the critical moisture content model based on Labuza's equation. The factor studied was the type of packaging, consisting of five types: aluminum foil, High Density Polyethylene (HDPE), Low Density Polyethylene (LDPE), Polypropylene (PP), and Polyethylene (PE). Based on the estimated shelf life results, the three packaging types with the best shelf life were selected to observe quality changes during storage. The quality change variables observed were pH, rehydration, titratable acidity, protein, and antioxidant activity. Shelf life and quality change data were analyzed using SPSS software version 29.

The results showed that packaging type significantly affects both the shelf life and the quality of torch ginger powdered kefir. Aluminum foil packaging provided a shelf life of 18.4 month, HDPE 8.8 month, LDPE 3 month, PP 15.2 month, and PE 2.3 month. Different packaging materials also offered varying levels of protection for the product's quality. Aluminum foil showed the smallest changes during storage, as seen in physicochemical parameters: pH decreased by 6.75%, rehydration time by 7.61%, total acidity increased by 10.6%, protein content decreased by 16.5%, and antioxidant activity decreased by 37.65%. Based on shelf life and quality changes, aluminum foil is recommended as the best packaging for torch ginger powdered kefir.