ABSTRAK

Putri Avrilia Rahman: ***Formulasi dan Analisis Aktivitas Antioksidan Minuman Serbuk Instan Kombinasi Andaliman (Zanthoxylum acanthopodium DC.) dan Buah Nanas (Ananas comosus L.).*** **Skripsi. Fakultas Teknik Universitas Negeri Medan. 2025**

Antioksidan adalah senyawa kimia yang memiliki kemampuan untuk melindungi tubuh dari kerusakan yang disebabkan oleh radikal bebas. Salah satu tanaman yang memiliki kandungan aktivitas antioksidan adalah andaliman dan nanas. Upaya untuk mempertahankan umur simpan andaliman dan buah nanas adalah mengubahnya menjadi minuman serbuk instan. Tujuan dari penelitian ini adalah untuk mengetahui formulasi, daya terima sensori, karakteristik fisik dan kimia, serta aktivitas antiksidan minuman serbuk instan kombinasi andaliman dan buah nanas.

Penelitian ini menggunakan Rancangan Acak Lengkap (RAL) dengan 3 perlakuan dan 2 pengulangan. Perlakuannya adalah F1 (serbuk nanas 75% : serbuk andaliman 25%), F2 (serbuk nanas 50% : serbuk andalian 75%) dan F3 (serbuk nanas 25% : serbuk andaliman 75%). Pembuatan serbuk andaliman menggunakan metode pengeringan dengan *dehydrator* dan pembuatan serbuk nanas menggunakan metode *foam mat drying* pada suhu 50^{o}C selama 12 jam. Penelitian ini dilakukan di laboratorium Gizi Universitas Negeri Medan, laboratorium Politeknik Teknologi Kimia Industri (PTKI), laboratorium Saraswanti Indo Genetech (SIG), dan Laboratorium Terpadu IPB. Data hasil penelitian dianalisis dengan ANOVA dan uji lanjut *Duncan's Multiple Range Test* (DNMRT) pada taraf 5%.

Berdasarkan hasil uji organoleptik tingkat kesukaan panelis terhadap warna berkisar antara 2.93-3.88 (tidak suka-agak suka), aroma berkisar antara 3.26-3.40 (agak suka), rasa berkisar antara 2.80-3.61 (tidak suka-agak suka) dan keseluruhan berkisar antara 2.98-3.48 (tidak suka-agak suka). Karakteristik fisik pada minuman serbuk instan kombinasi andaliman dan buah nanas yaitu pada rendemen andaliman 53.56%, rendemen nanas 22.29%, tingkat kelarutan berkisar antara 98.89-99.12%, densitas kamba berkisar antara 83.57-90.28%, dan higroskopisitas berkisar antara 7.09-8.28%. Karakteristik kimia pada minuman serbuk instan yaitu pH larutan berkisar antara 3.91-4.25, kadar air berkisar antara 2.04-2.37%, kadar abu berkisar antara 0.21-0.36, kadar gula total berkisar antara 65.67-69.02%, kadar vitamin C berkisar antara 4.77-7.75mg/100g, dan kadar flavonoid berkisar antara 14.04-19.26 mg/g. Aktivitas antioksidan minuman serbuk instan berkisar antara 118.43-168.07 ppm. Perlakuan terbaik berdasarkan uji De Garmo terdapat pada formula F3 (serbuk nanas 25% : serbuk andaliman 75%).

Kata kunci : Andaliman, Antioksidan, Minuman serbuk instan, Nanas

ABSTRACT

Putri Avrilia Rahman: Formulation and Analysis of Antioxidant Activity of Instant Powder Drink Combination of Andaliman (Zanthoxylum acanthopodium DC.) and Pineapple (Ananas comosus L). Essay. Faculty of Engineering, State University of Medan. 2025

Antioxidants are chemical compounds that have the ability to protect the body from damage caused by free radicals. One of the plants that contains antioxidant activity is andaliman and pineapple. The effort to maintain the shelf life of andaliman and pineapple fruit is to turn them into instant powder drinks. The aim of this research was to determine the formulation, sensory acceptability, physical and chemical characteristics, and antioxidant activity of instant powder drink combination of andaliman and pineapple.

This research used a Completely Randomized Design (CRD) with 3 treatments and 2 repetitions. The treatments were F1 (75% pineapple powder : 25% andaliman powder), F2 (50% pineapple powder : 75% andaliman powder) and F3 (25% pineapple powder : 75% andaliman powder). Making andaliman powder uses the drying method with a dehydrator and making pineapple powder using the foam mat drying method at a temperature of 50oC for 12 hours. This research was carried out at the Nutrition laboratory at Medan State University, the Industrial Chemical Technology Polytechnic laboratory (PTKI), the Saraswanti Indo Genetech (SIG) laboratory, and the IPB Integrated Laboratory. The research data were analyzed using ANOVA and Duncan's Multiple Range Test (DNMRT) at the 5% level.

Based on the results of the organoleptic test, the panelists' liking level for color ranged between 2.93-3.88 (dislike-somewhat), aroma ranged between 3.26-3.40 (somewhat like), taste ranged between 2.80-3.61 (dislike-somewhat like) and overall ranged between 2.98-3.48 (dislike-somewhat). The physical characteristics of the instant powder drink combination of andaliman and pineapple fruit are the andaliman yield of 53.56%, the pineapple yield of 22.29%, the solubility level ranges from 98.89-99.12%, the kamba density ranges from 83.57-90.28%, and the hygroscopicity ranges from 7.09-8.28 %. The chemical characteristics of instant powdered drinks are that the pH of the solution ranges from 3.91-4.25, the water content ranges from 2.04-2.37%, the ash content ranges from 0.21-0.36, the total sugar content ranges from 65.67-69.02%, the vitamin C content ranges from 4.77-7.75 mg/100g, and flavonoid levels ranged from 14.04-19.26 mg/g. The antioxidant activity of instant powder drinks ranges from 118.43-168.07 ppm. The best treatment based on the De Garmo test is in the F3 formula (pineapple powder 25% : andaliman powder 75%).

Keywords: Andaliman, Antioxidants, Instant powdered drinks, Pineapple