

ABSTRAK

Wan Caryssa Umaira Azhar: *Formulasi dan Analisis Aktivitas Antioksidan Minuman Serbuk Instan Kombinasi Andaliman (*Zanthoxylum acanthopodium* DC.) dengan Kuweni (*Mangifera odorata* Griff).* Skripsi. Fakultas Teknik Universitas Negeri Medan. 2025.

Antioksidan merupakan senyawa bioaktif yang berfungsi melindungi tubuh dari kerusakan akibat radikal bebas. Andaliman dan kuweni merupakan bahan pangan lokal yang mengandung senyawa antioksidan, namun umur simpannya relatif singkat. Salah satu cara untuk meningkatkan umur simpan dan nilai fungsionalnya adalah dengan mengolahnya menjadi minuman serbuk instan. Penelitian ini bertujuan untuk mengetahui formulasi, daya terima sensori, karakteristik fisik dan kimia, serta aktivitas antioksidan minuman serbuk instan kombinasi andaliman dan kuweni.

Penelitian ini dilaksanakan pada bulan Oktober hingga Desember 2024 di Laboratorium Gizi Universitas Negeri Medan dan Laboratorium Politeknik Kimia dan Industri Medan, dengan jumlah responden sebanyak 30 orang. Penelitian menggunakan Rancangan Acak Lengkap (RAL) dengan 3 perlakuan dan 2 ulangan, yaitu F1 (kuweni 75% : andaliman 25%), F2 (kuweni 50% : andaliman 50%), dan F3 (kuweni 25% : andaliman 75%). Serbuk andaliman dibuat dengan metode pengeringan menggunakan *dehydrator*, sedangkan serbuk kuweni dibuat dengan metode *foam-mat drying*. Analisis meliputi uji organoleptik, karakteristik fisik (rendemen, kelarutan, densitas kamba, higroskopisitas), karakteristik kimia (kadar air, kadar abu, kadar gula total, pH larutan, flavonoid), serta aktivitas antioksidan dengan metode DPPH. Data dianalisis menggunakan ANOVA, uji Duncan, dan metode indeks efektivitas De Garmo.

Hasil uji hedonik menunjukkan nilai kesukaan panelis terhadap warna berkisar antara 3,28–3,91 (agak suka), aroma 3,48–3,63 (agak suka), rasa 3,06–3,66 (agak suka), dan keseluruhan 3,16–3,70 (agak suka). Karakteristik fisik minuman serbuk instan diperoleh rendemen andaliman 53,4% dan kuweni 19,1%, tingkat kelarutan 95,03–97,74%, densitas kamba 86,51–89,09%, serta higroskopisitas 7,32–8,25%. Karakteristik kimia menunjukkan pH larutan 3,74–4,21, kadar air 2,08–2,58%, kadar abu 0,28–0,41%, kadar gula total 66,51–69,78%, dan kadar flavonoid 21,17–25,04 mg/g. Aktivitas antioksidan berkisar antara 88,19–114,13 ppm. Formula terbaik berdasarkan uji De Garmo adalah F1 (kuweni 75% : andaliman 25%).

Kata kunci: Andaliman, Kuweni, Antioksidan, Minuman serbuk instan.

ABSTRACT

Wan Caryssa Umaira Azhar: *Formulation and Antioxidant Activity Analysis of Instant Powdered Drink from a Combination of Andaliman (*Zanthoxylum acanthopodium* DC.) and Kuweni (*Mangifera odorata* Griff). Essay. Faculty of Engineering, State University of Medan. 2025.*

Antioxidants are bioactive compounds that function to protect the body from damage caused by free radicals. Andaliman and kuweni are local food ingredients containing antioxidant compounds; however, their shelf life is relatively short. One way to improve their shelf life and functional value is by processing them into instant powdered drinks. This study aimed to determine the formulation, sensory acceptability, physical and chemical characteristics, as well as the antioxidant activity of instant powdered drinks made from a combination of andaliman and kuweni.

This study was conducted from October to December 2024 at the Nutrition Laboratory of Universitas Negeri Medan and the Laboratory of Politeknik Kimia dan Industri Medan, with a total of 30 respondents. The study employed a Completely Randomized Design (CRD) with 3 treatments and 2 replications, namely F1 (75% kuweni : 25% andaliman), F2 (50% kuweni : 50% andaliman), and F3 (25% kuweni : 75% andaliman). Andaliman powder was prepared using a dehydrator drying method, while kuweni powder was prepared using foam-mat drying. Analyses included organoleptic testing, physical characteristics (yield, solubility, bulk density, hygroscopicity), chemical characteristics (moisture content, ash content, total sugar, solution pH, flavonoid content), and antioxidant activity using the DPPH method. Data were analyzed using ANOVA, Duncan's test, and De Garmo's effectiveness index method. Hedonic test results showed that panelists' preference scores ranged from 3.28–3.91 (slightly like) for color, 3.48–3.63 (slightly like) for aroma, 3.06–3.66 (slightly like) for taste, and 3.16–3.70 (slightly like) for overall acceptance.

The physical characteristics of the instant powdered drink were as follows: yield of andaliman powder 53.4% and kuweni powder 19.1%, solubility 95.03–97.74%, bulk density 86.51–89.09%, and hygroscopicity 7.32–8.25%. The chemical characteristics showed solution pH 3.74–4.21, moisture content 2.08–2.58%, ash content 0.28–0.41%, total sugar 66.51–69.78%, and flavonoid content 21.17–25.04 mg/g. Antioxidant activity ranged from 88.19–114.13 ppm. The best formula based on De Garmo's test was F1 (75% kuweni : 25% andaliman).

Keywords: Andaliman, Kuweni, Antioxidant, Instant powdered drink.