

Analisis Energi dan Makronutrien pada Formulasi *Snack Bar* dengan Tepung Mocaf, Tepung Buah Bit, dan Buah Kurma

Rasya Alifa Humaira¹, Ayu Rahadiyanti¹

ABSTRAK

Latar belakang: Anemia termasuk dalam permasalahan gizi yang sering terjadi pada remaja putri, yang disebabkan oleh asupan zat gizi yang kurang, terutama zat besi, protein, dan energi. Untuk mengatasi masalah ini, diperlukan inovasi makanan selingan yang bernutrisi dan praktis dikonsumsi.

Tujuan: Mengetahui perbedaan kandungan energi dan zat gizi protein, lemak, karbohidrat, kadar air dan kadar abu pada *snack bar* dengan tepung mocaf, tepung buah bit, dan buah kurma.

Metode: Penelitian dengan desain rancangan acak lengkap untuk menganalisis *snack bar* F0 (kontrol) serta F1, F2, F3, F4 yang dibedakan berdasarkan persentase penggunaan tepung mocaf, tepung buah bit, dan kurma yaitu F0 (100% : 0% : 0%), F1 (50% : 30% : 20%), F2 (50% : 25% : 25%), dan F3 (50% : 20% : 30%). Pengujian kandungan energi, karbohidrat, protein, lemak, kadar air, dan kadar abu menggunakan metode perhitungan kalori total, *by Difference*, Kjeldahl, Soxhlet, gravimetri kadar air, dan gravimetri kadar abu. Formulasi terbaik ditentukan dengan metode *Multiattribute Decision Using A Compensatory Model and Additive Weighting*.

Hasil: Hasil uji menunjukkan perbedaan signifikan ($p < 0,05$) pada semua parameter gizi. Formulasi F3 memiliki kandungan energi tertinggi (389,32 kkal/100 g) dan kadar lemak tertinggi (12,76%), sedangkan F2 memiliki kadar protein tertinggi (5,94%). Kandungan kadar air tertinggi terdapat pada F2 (22,05%), sedangkan kadar abu tertinggi ditemukan pada F1 (4,20%).

Simpulan: Formulasi *snack bar* berbasis tepung mocaf, tepung buah bit, dan kurma memberikan kontribusi yang signifikan terhadap kandungan makronutrien. Formulasi terbaik berdasarkan metode *Multiattribute Decision Using A Compensatory Model and Additive Weighting* (MADCAW) adalah F3 dengan komposisi 50% tepung mocaf, 20% tepung buah bit, dan 30% kurma.

Kata kunci: *Snack bar*, tepung mocaf, tepung buah bit, kurma, makronutrien

¹Program Studi Ilmu Gizi, Fakultas Kedokteran, Universitas Diponegoro, Semarang

Energy and Macronutrient Analysis of Snack Bar Formulation with Mocaf Flour, Beetroot Powder, and Dates

Rasya Alifa Humaira¹, Ayu Rahadiyanti¹

ABSTRACT

Background: Anemia is a prevalent nutritional issue among adolescent girls, primarily due to inadequate intake of essential nutrients such as iron, protein, and energy. There is a need for innovative, nutrient-dense, and practical snack alternatives to help address this issue.

Objective: This study aimed to analyze the differences in energy content and nutritional composition namely protein, fat, carbohydrates, moisture, and ash content of snack bars formulated with mocaf flour, beetroot flour, and dates.

Methods: A Completely Randomized Design (CRD) was employed to assess four formulations: F0 (control: 100% mocaf flour), F1 (50% mocaf, 30% beetroot, 20% dates), F2 (50% mocaf, 25% beetroot, 25% dates), and F3 (50% mocaf, 20% beetroot, 30% dates). Nutrient analysis was conducted using standard methods: total calorie calculation, by-difference method for carbohydrates, Kjeldahl method for protein, Soxhlet extraction for fat, and gravimetric methods for moisture and ash content. The best formulation was identified using the Multiattribute Decision Using a Compensatory Model and Additive Weighting (MADCAW) method.

Results: Significant differences ($p < 0.05$) were observed across all nutritional parameters. F3 exhibited the highest energy (389.32 kcal/100 g) and fat content (12.76%), while F2 had the highest protein content (5.94%). F2 also showed the highest moisture content (22.05%), and F1 had the highest ash content (4.20%).

Conclusion: The combination of mocaf flour, beetroot flour, and dates significantly enhanced the macronutrient content of the snack bars. Based on the Multiattribute Decision Using A Compensatory Model and Additive Weighting method, F3 (50% mocaf, 20% beetroot, 30% dates) was identified as the optimal formulation.

Keywords: *Snack bar*, mocaf flour, beetroot flour, dates, macronutrients

¹Nutrition Science Departement, Medical Faculty of Diponegoro University, Semarang