PENGEMBANGAN *SNACK BAR* BERBASIS TEPUNG TEMPE DAN BIJI KURMA UNTUK MENDUKUNG PERFORMA KEBUGARAN

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Abstrak

Degradasi otot dan penurunan performa kebugaran dapat terjadi akibat asupan zat gizi yang tidak adekuat, khususnya pada individu yang aktif berolahraga. Oleh karena itu, diperlukan produk pangan fungsional seperti *snack bar* berbasis tepung tempe dan tepung biji kurma yang mengandung protein dan aktivitas antioksidan optimal untuk mendukung peningkatan massa dan kekuatan otot serta menangkal stres oksidatif. Penelitian ini bertujuan untuk mengevaluasi kandungan proksimat, aktivitas antioksidan, serta mutu sensoris *snack bar*. Metode yang digunakan yaitu Rancangan Acak Lengkap menggunakan 5 (lima) level perlakuan proporsi tepung tempe dan tepung biji kurma, yaitu F1 (100% biji kurma : 0% tempe), F2 (75% biji kurma : 25% tempe), F3 (50% biji kurma : 50% tempe), F4 (25% biji kurma : 75% tempe), dan F5 (0% biji kurma : 100% tempe). Analisis ragam (ANOVA) dilanjutkan dengan uji lanjut *Duncan's Multiple Range Test* (DMRT) digunakan untuk mengevaluasi parameter proksimat dan antioksidan. Sementara itu, uji Kruskal-Wallis dilanjutkan dengan uji lanjut Mann-Whitney digunakan untuk mengevaluasi parameter sensoris. Hasil penelitian menunjukkan bahwa proporsi tepung tempe berpengaruh signifikan terhadap kadar protein, lemak, karbohidrat, energi, aktivitas antioksidan, serta sifat sensoris produk *snack bar* ($p<0,05$). Formulasi terbaik adalah F4 (25% biji kurma : 75% tepung tempe) dengan kandungan air 35.9%, abu 1.22%, protein 16,1%, lemak 15,3%, karbohidrat 27.2%, energi 325,9 kkal per porsi, dan nilai IC_{50} aktivitas antioksidan sebesar 4.845 mg/kg.

Kata Kunci: *Snack bar*, tepung tempe, biji kurma, aktivitas antioksidan, pangan fungsional, performa kebugaran.

DEVELOPMENT OF SNACK BAR BASED ON TEMPEH FLOUR AND DATE SEEDS TO SUPPORT PHYSICAL PERFORMANCE

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Abstract

Muscle degradation and decreased physical performance can result from inadequate nutritional intake, particularly among individuals who are physically active or engage in high-intensity exercise. Therefore, functional food products such as *snack bar*s based on tempeh flour and date seed flour, which provide optimal protein content and antioxidant activity, are necessary to support muscle mass and strength gains while combating oxidative stress. This study aimed to evaluate the proximate composition, antioxidant activity, and sensory quality of *snack bar*s. A Completely Randomized Design (CRD) was employed, with five treatment levels of tempeh flour and date seed flour proportions: F1 (100% date seeds: 0% tempeh), F2 (75% date seeds: 25% tempeh), F3 (50% date seeds: 50% tempeh), F4 (25% date seeds: 75% tempeh), and F5 (0% date seeds: 100% tempeh). Analysis of variance (ANOVA) followed by *Duncan's Multiple Range Test* (DMRT) was used to evaluate proximate and antioxidant parameters, whereas sensory parameters were assessed using the Kruskal-Wallis test followed by the Mann-Whitney test. Determination of the optimal formulation employed De Garmo's effectiveness index method. The results indicated that the proportion of tempeh flour significantly affected the protein, fat, carbohydrate, energy, and antioxidant activity of the *snack bar* products ($p<0.05$). The optimal formulation was identified as F4 (25% date seeds: 75% tempeh flour), with an effectiveness index value of 0.66. This formulation contained 35.9% moisture, 1.22% ash, 16.1% protein, 15.3% fat, 27.2% carbohydrates, an energy value of 325.9 kcal per serving, and an antioxidant activity IC_{50} value of 4,845 mg/kg.

Keywords: *Snack bar*, tempeh flour, date seeds, antioxidant activity, functional food, physical performance.