Karakteristik Fisikokimia pada Formulasi Kukis dengan Substitusi Tepung Jangkrik (*Acheta Domesticus*) sebagai Alternatif Kudapan Remaja Putri

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ABSTRAK

Latar belakang : Masalah gizi berupa KEK pada kelompok remaja yang memiliki prevalensi tertinggi dibandingkan kelompok usia lainnya, yaitu 36,3% serta dampak yang luas membutuhkan suatu tindakan penanggulangan. Jangkrik mengandung tinggi zat gizi terutama protein termasuk seluruh golongan asam amino esensial, energi, dan mineral yang berguna untuk remaja, sehingga penambahan tepung jangkrik pada produk kukis yang disukai remaja dapat meningkatkan kandungan gizi pada produk. Untuk mengetahui kandungan gizi dan kualitas kukis yang dihasilkan, akan dilakukan pengujian pada atribut kimia yang meliputi kadar air, abu, protein, lemak, karbohidrat, energi, dan serat kasar, serta atribut fisik berupa tekstur yang meliputi kekerasan, kepaduan, elastisitas, dan daya lengket.

Tujuan : Mengetahui pengaruh penambahan tepung jangkrik terhadap atribut fisikokimia pada kukis.

Metode : Penelitian eksperimental acak lengkap satu faktor dengan 5 formulasi kukis yaitu F0 (0% tepung jangkrik : 100% tepung terigu), F1 (5% tepung jangkrik : 95% tepung terigu), F2 (10% tepung jangkrik : 90% tepung terigu), F3 (15% tepung jangkrik : 85% tepung terigu), F4 (20% tepung jangkrik : 80% tepung terigu). Kadar air, abu, protein, lemak, karbohidrat, energi, dan serat kasar masing-masing diuji menggunakan metode thermogravimetri, *drying ash, Kjedhal, Soxhlet, by difference,* total kalori*,* dan gravimetri. Sedangkan tekstur diuji menggunakan *Texture Analyzer*. Analisis statistik kandungan gizi menggunakan *Kruskal-Wallis* dengan uji lanjut *Mann-Whitney* sedangkan tekstur menggunakan *One-Way Anova* dengan uji lanjut *Tukey* dan/atau *Kruskal-Wallis.*

Hasil : Kukis dengan penambahan tepung jangkrik meningkatkan kadar abu, protein, lemak, serat kasar, dan energi, sebaliknya kadar air dan karbohidrat mengalami penurunan. Kukis formulasi F4 secara keseluruhan hampir memenuhi syarat kandungan gizi PMT anak sekolah. Hasil uji tekstur menunjukkan bahwa penambahan tepung jangkrik berpengaruh terhadap kekerasan bagian tengah kukis namun tidak berpengaruh terhadap kepaduan, elastisitas, dan daya lengket serta tidak berbeda secara signifikan dengan kukis komersial "The Good Friend".

Simpulan : Penambahan tepung jangkrik tidak memengaruhi atribut fisik kukis berupa tekstur namun memengaruhi karakteristik kimia kukis. Penambahan tepung jangkrik meningkatkan kadar abu, protein, lemak, dan serat kasar, serta menurunkan kadar air dan karbohidrat.

Kata kunci : kukis, makronutrien, remaja, tekstur, tepung jangkrik

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Physicochemical Properties of Cookies Enriched with Cricket Powder (*Acheta Domesticus*) as an Alternative Snack for Female Adolescents

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ABSTRACT

Background : The adolescent nutrition problem in the form of Chronic Energy Deficiency (CED) which has the highest prevalence, 36.3%, and broad impact requires a countermeasure. Crickets contain high levels of nutrients, especially protein, including all groups of essential amino acids, energy, and minerals that are useful for teenagers, so the addition of cricket powder in cookies products preferred by adolescent can increase the nutritional content of the product. To ensure the nutritional value and quality of the cookies, a comprehensive testing approach will be employed. This will involve two main aspects: chemical attributes include water content, ash, protein, fat, carbohydrates, energy, and crude fiber; physical atributes include the texture of the cookies (hardness, cohesiveness, springiness, adhesion).

Objective : To determine physicochemical properties of cookies with cricket powder formulation.

Methods : An experimental study with a complete randomized design with 5 treatments, namely F0 (0% cricket powder : 100% wheat flour), F1 (5% cricket powder : 95% wheat flour), F2 (10% cricket powder : 90% wheat flour), F3 (15% cricket powder : 85% wheat flour), F4 (20% cricket powder : 80% wheat flour). The moisture, ash, protein, fat, carbohydrates, crude fiber, and energy content was carried out using the thermogravimetric, drying ash, Kjedhal, Soxhlet, by difference, and gravimetric methods. Texture was carried out using Texture Analyzer. Statistical analysis of nutrient content was analyzed using Kruskal-Wallis with Mann-Whitney follow-up test and texture using One-Way Anova with Tukey follow-up test and/or Kruskal-Wallis test.

Results : Cookies enriched with cricket powder increased ash, protein, fat, crude fiber, and energy content, whereas water and carbohydrates content decreased. The F4 formulation cookie is in accordance with the PMT nutritional content requirements for school children. The results of the texture test showed that the addition of cricket powder had an effect on the hardness on the middle of the cookie, but had no effect on the cohesiveness, springiness, and adhesion and was not significantly different from the commercial cookie "The Good Friend".

Conclusion : The addition of cricket powder did not affects the physical properties of the cookies, but affect the chemical properties of the cookies, it increase the ash, protein, fat, crude fiber, energy content, and decreased the moisture and carbohydrate content.

Keywords : adolescents, cookies, cricket powder, macronutrient, texture

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