

PENGARUH SUBSTITUSI TEPUNG HATI AYAM DAN TEPUNG KACANG MERAH TERHADAP KARAKTERISTIK KIMIA DAN STABILITAS PENYIMPANAN BROWNIES CRISPY SEBAGAI SNACK SUMBER PROTEIN DAN ZAT BESI

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INTISARI

Latar belakang: Anemia merupakan masalah kesehatan yang banyak dialami oleh remaja putri di Indonesia. Penyebabnya adalah karena kebiasaan makan yang buruk, tidak bergizi seimbang, dan kurangnya konsumsi makanan sumber protein dan zat besi. Oleh karena itu, pengembangan snack sumber protein dan zat besi yang banyak disukai seperti brownies crispy dengan substitusi tepung hati ayam dan tepung kacang merah diharapkan dapat menjadi alternatif. Selama penyimpanan, mutu dan daya terima brownies crispy dapat menurun apabila kondisi penyimpanannya tidak tepat.

Tujuan: Mengetahui perbedaan karakteristik kimia (air, abu, protein, lemak, karbohidrat, zat besi) dan stabilitas penyimpanan brownies crispy dengan adanya substitusi tepung hati ayam dan tepung kacang merah.

Metode: Terdapat 3 formula dengan perbandingan tepung hati ayam:tepung kacang merah 0:0% (formula A), 20:30% (formula B), 25:25% (formula C). Karakteristik kimia dianalisis dengan metode yang sesuai AOAC 2005 dan pada minggu ke-0, 2, 4, 6, 8 dilakukan analisis kadar air dan pengamatan visual. Data yang diperoleh dianalisis dengan *One Way ANOVA* apabila berdistribusi normal dan dilanjutkan uji *Duncan* apabila signifikan sedangkan data yang tidak normal dianalisis dengan *Kruskal Wallis* dilanjutkan uji *Mann Whitney* apabila signifikan.

Hasil penelitian: Kadar air ketiga formula brownies crispy tidak berbeda signifikan ($p > 0,05$). Sedangkan kadar abu, protein, lemak, zat besi meningkat dan karbohidrat menurun signifikan dibandingkan kontrol ($p < 0,05$). Seiring penambahan tepung hati ayam, kadar protein dan lemak semakin meningkat sebaliknya karbohidrat semakin menurun. Selama delapan minggu penyimpanan dalam toples plastik di suhu kamar, ketiga formula brownies meningkat kadar airnya ($p < 0,05$) dengan peningkatan tertinggi pada formula A. Kerenyahan brownies juga semakin menurun. Di minggu ke-4, aroma dan rasa hati ayam pada formula B dan C cukup kuat dan di minggu ke-6 ketiga formula mulai tengik.

Kesimpulan: Substitusi tepung hati ayam dan tepung kacang merah tidak memengaruhi kadar air namun secara signifikan meningkatkan kadar abu, protein, lemak, zat besi dan menurunkan kadar karbohidrat brownies crispy. Ketiga formula brownies menjadi tidak stabil setelah dua minggu penyimpanan di suhu kamar karena kadar airnya semakin meningkat, tekstur sudah tidak renyah, dan aroma tengik serta rasa hati ayam pada formula yang disubstitusi menguat.

Kata kunci: brownies crispy, tepung hati ayam, tepung kacang merah, karakteristik kimia, stabilitas penyimpanan

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THE EFFECT OF CHICKEN LIVER FLOUR AND RED BEAN FLOUR SUBSTITUTION ON CHEMICAL CHARACTERISTICS AND STORAGE STABILITY OF BROWNIES CRISPY AS A SNACK SOURCE OF PROTEIN AND IRON

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ABSTRACT

Background: Anemia is a health problem that is often experienced by young women in Indonesia. The cause is due to bad eating habits, not having balanced nutrition, and lack of consumption of foods sources of protein and iron. Therefore, the development of protein and iron source snacks that are mostly liked such as brownies crispy with chicken liver flour and red bean flour substitution is expected to be an alternative. During storage, the quality and acceptability of brownies crispy can decrease if the storage conditions are not right.

Objective: To determine the differences in chemical characteristics (water, ash, protein, fat, carbohydrates, iron) and storage stability of brownies crispy with the substitution of chicken liver flour and red bean flour.

Method: There are 3 formulas with a ratio of chicken liver flour: red bean flour 0:0% (formula A), 20:30% (formula B), 25:25% (formula C). Chemical characteristics were analyzed using methods according to AOAC 2005 and at weeks 0, 2, 4, 6, 8 water content analysis and visual observation were carried out. The data obtained was analyzed using One Way ANOVA if it was normally distributed and followed by the Duncan test if it was significant, while data that was not normal was analyzed using the Kruskal Wallis followed by the Mann Whitney test if it was significant.

Results: The water content of the three brownies formulas did not significantly different ($p>0,05$). While the ash, protein, fat, iron content increased and carbohydrates decreased significantly compared to the control ($p<0,05$). Along with the addition of chicken liver flour, the protein and fat content increased, while carbohydrates decreased. During eight weeks of storage in plastic jars at room temperature, the water content of the three formulas increased ($p<0,05$) with the highest increase in formula A. The crispiness of the brownies also decreased. In the 4th week, the aroma and taste of chicken liver in formulas B and C was quite strong and in the 6th week all three formulas started to go rancid.

Conclusion: Substitution of chicken liver flour and red bean flour did not affect the water content but significantly increased the ash, protein, fat, iron content and decreased the carbohydrate content of brownies crispy. The three brownies formulas became unstable after two weeks of storage at room temperature because the water content increased, the texture was no longer crispy and the rancid aroma and chicken liver taste in the substituted formula became stronger.

Keywords: brownies crispy, chicken liver flour, red bean flour, chemical characteristics, storage stability

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