

ABSTRAK

Dwana Mutiara Aulia: Uji Organoleptik dan Analisis Fisikokimia Tortilla Chips Substitusi Tepung Teri dan Tepung Tempe sebagai Alternatif Camilan Sumber Protein. Skripsi. Fakultas Teknik Universitas Negeri Medan. 2026.

Produk *tortilla chips* yang beredar di pasaran umumnya memiliki kandungan protein yang relatif rendah. Rendahnya asupan protein dalam jangka panjang dapat meningkatkan risiko terjadinya masalah gizi kronis. Oleh karena itu, diperlukan inovasi produk pangan melalui pemanfaatan bahan pangan lokal kaya protein, seperti tepung ikan teri nasi dan tepung tempe, guna meningkatkan nilai gizi produk. Penelitian ini bertujuan untuk menganalisis pengaruh substitusi tepung ikan teri nasi dan tepung tempe terhadap karakteristik organoleptik dan fisikokimia *tortilla chips*, serta menentukan formula terbaik sebagai alternatif camilan sumber protein.

Penelitian ini merupakan penelitian eksperimen dengan Rancangan Acak Lengkap (RAL) yang terdiri atas empat formulasi, yaitu perbandingan jagung : tepung teri dan tepung tempe pada F0 (100%:0%), F1 (85%:15%), F2 (80%:20%), F3 (75%:25%). Penelitian ini dilaksanakan pada bulan September – November 2025 di Laboratorium Instrumentasi Pusat Universitas Andalas untuk analisis fisik, dan Laboratorium Gizi Universitas Negeri Medan untuk uji organoleptik dan analisis kimia. Data hasil uji organoleptik dianalisis menggunakan uji *Kruskal Wallis* dan uji lanjut *Mann Whitney*, dan data hasil uji fisikokimia dianalisis dengan uji ANOVA dan uji lanjut *Duncan's Multiple Range Test* (DNMRT) dengan taraf kepercayaan 95%. Penentuan formulasi terbaik dilakukan menggunakan Metode Penentuan Eksponensial (MPE).

Berdasarkan hasil uji organoleptik rentang tingkat kesukaan panelis terhadap parameter rasa antara 3.52-4.07 (agak suka-suka), tekstur antara 3.73-4.30 (agak suka-suka), warna antara 3.28-4.37 (agak suka-suka), aroma antara 3.58-4.05 (agak suka-suka), keseluruhan antara 3.52-4.37 (agak suka-suka). Karakteristik fisik kekerasan berkisar antara 20.05-40.73 N/cm², adapun karakter kimia yaitu kadar protein berkisar antara 6.01-16.88%, kadar lemak antara 8.80-12.20%, kadar karbohidrat antara 68.54-78.21%, kadar air antara 2.98-3.60%, dan kadar abu antara 0.60-1.71%. Berdasarkan hasil analisis MPE, formula terbaik diperoleh oleh F1 (jagung 85% : tepung teri dan tepung tempe 15%) dengan nilai rerata rasa 4,18 (suka), tekstur 4,25 (suka), warna 4,07 (suka), aroma 4,05 (suka), keseluruhan 4,30 (suka), kekerasan 23,72 N/cm², kadar protein 12,63%, kadar lemak 9,77%, kadar karbohidrat 72,99%, kadar air 3,21%, kadar abu 1,39%, dan total energi 430,5%.

Kata Kunci: *tortilla chips*, tepung teri, tepung tempe, sumber protein

ABSTRACT

Dwana Mutiara Aulia. *Organoleptic Evaluation and Physicochemical Analysis of Tortilla Chips Substituted with Anchovy Flour and Tempeh Flour as an Alternative Protein-Rich Snack*. Thesis. Faculty of Engineering, State University of Medan, 2026.

Tortilla chips available in the market generally have relatively low protein content. Inadequate protein intake over a prolonged period may increase the risk of chronic nutritional problems. Therefore, food product innovation is needed through the utilization of locally available protein-rich ingredients, such as anchovy flour and tempeh flour, to enhance the nutritional value of the product. This study aimed to analyze the effect of substituting anchovy flour and tempeh flour on the organoleptic and physicochemical characteristics of tortilla chips, as well as to determine the best formulation as an alternative protein-rich snack.

This study employed an experimental design using a Completely Randomized Design (CRD) consisting of four formulations, namely the ratio of corn to a mixture of anchovy flour and tempeh flour: F0 (100%:0%), F1 (85%:15%), F2 (80%:20%), and F3 (75%:25%). The research was conducted from September to November 2025 at the Central Instrumentation Laboratory of Universitas Andalas for physical analysis, and at the Nutrition Laboratory of Universitas Negeri Medan for organoleptic and chemical analyses. Organoleptic data were analyzed using the Kruskal Wallis test followed by the Mann Whitney post hoc test, while physicochemical data were analyzed using Analysis of Variance (ANOVA) followed by Duncan's Multiple Range Test (DMRT) at a 95% confidence level. The best formulation was determined using the Exponential Comparison Method (ECM).

The organoleptic test results showed that the panelists' preference scores ranged from 3.52–4.07 (moderately liked to liked) for taste, 3.73–4.30 (moderately liked to liked) for texture, 3.28–4.37 (moderately liked to liked) for color, 3.58–4.05 (moderately liked to liked) for aroma, and 3.52–4.37 (moderately liked to liked) for overall acceptance. The physical characteristic, namely hardness, ranged from 20.05–40.73 N/cm². The chemical characteristics showed that protein content ranged from 6.01–16.88%, fat content from 8.80–12.20%, carbohydrate content from 68.54–78.21%, moisture content from 2.98–3.60%, and ash content from 0.60–1.71%. Based on the ECM analysis, the best formulation was F1 (85% corn : 15% anchovy flour and tempeh flour) with mean organoleptic scores of 4.18 (liked) for taste, 4.25 (liked) for texture, 4.07 (liked) for color, 4.05 (liked) for aroma, and 4.30 (liked) for overall acceptance. This formulation also had a hardness value of 23.72 N/cm², protein content of 12.63%, fat content of 9.77%, carbohydrate content of 72.99%, moisture content of 3.21%, ash content of 1.39%, and total energy of 430.5%.

Keywords: *tortilla chips, anchovy flour, tempeh flour, protein-rich*