UNIVERSITAS
GADJAH MADA
**Optimasi Konsentrasi Granula Arthrospira platensis dan Tepung Jagung Menggunakan Metode Response
Surface Methodology Terhadap Nilai Gizi Cookies Balita serta Minat Beli Konsumen**
Ummu Fadillah, Dr. Nurfitri Ekantari, S.Pi., M.P.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Intisari

Optimasi Konsentrasi Granula *Arthrospira platensis* dan Tepung Jagung Menggunakan Metode *Response Surface Methodology* Terhadap Nilai Gizi *Cookies* Balita Serta Minat Beli Konsumen

Penelitian ini bertujuan mengoptimalkan kombinasi tepung jagung dan granula *Arthrospira platensis* terhadap kandungan gizi *cookies* balita serta mengevaluasi minat beli konsumen. Optimasi dilakukan menggunakan *Response Surface Methodology* (RSM) dengan rancangan *Central Composite Design* (CCD) dua faktor, yaitu konsentrasi tepung jagung (20%, 35%, dan 50%) dan konsentrasi granula *A. platensis* (3%, 6%, dan 9%), menghasilkan 13 kombinasi formulasi. Parameter yang dianalisis meliputi kadar protein, aktivitas antioksidan, dan zat besi (Fe) yang dioptimasi menggunakan Minitab 22, sedangkan minat beli konsumen dianalisis menggunakan *Partial Least Squares Structural Equation Modeling* (PLS-SEM) dengan melibatkan 120 responden orang tua. Hasil menunjukkan kombinasi tepung jagung dan granula *A. platensis* memberikan pengaruh yang berbeda terhadap kandungan gizi *cookies* balita. Formulasi optimum diperoleh pada tepung jagung sebesar 43,35% dan granula *A. platensis* sebesar 7,15% dengan nilai *desirability* 0,62. Uji verifikasi menunjukkan seluruh parameter tidak berbeda nyata antara nilai prediksi dan nilai aktual ($p>0,05$), sehingga model RSM valid untuk memprediksi formulasi optimum. Pada takaran saji 24 g, *cookies* balita granula *A. platensis* memberikan kontribusi terhadap Angka Kecukupan Gizi (AKG) balita sebesar 6,60–8,25% protein, 12,02–13,36% lemak, 32,80–46,86% zat besi, 6,87–7,03% karbohidrat, dan 8,65–8,97% energi. Analisis minat beli menunjukkan *Health Consciousness* dan *Subjective Norm* berpengaruh positif dan signifikan terhadap *Attitude*, dan *Attitude* berpengaruh positif dan signifikan terhadap *Purchase Intention*. *Cookies* dengan kombinasi tepung jagung dan granula *A. platensis* berpotensi dikembangkan sebagai pangan tambahan berbasis bahan baku lokal dengan kandungan gizi yang baik dan potensi penerimaan konsumen yang positif.

KATA KUNCI: Granula *Arthrospira platensis*, *cookies* balita, tepung jagung, *Response Surface Methodology*, minat beli.

UNIVERSITAS
GADJAH MADA
**Optimasi Konsentrasi Granula Arthrospira platensis dan Tepung Jagung Menggunakan Metode Response
Surface Methodology Terhadap Nilai Gizi Cookies Balita serta Minat Beli Konsumen**
Ummu Fadillah, Dr. Nurfitri Ekantari, S.Pi., M.P.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Abstract

Optimization of *Arthrospira platensis* Granule and Corn Flour Concentrations Using Response Surface Methodology on the Nutritional Value of Toddler Cookies and Consumer Purchase Intention

This research aimed to optimize the formulation of corn flour and *Arthrospira platensis* granules to maximize the nutritional profile of toddler cookies and to evaluate consumer purchase intention. Optimization was performed using Response Surface Methodology (RSM) with a two-factor Central Composite Design (CCD), corn flour concentration (20%, 35%, and 50%) and *A. platensis* granule concentration (3%, 6%, and 9%), generating 13 formulation combinations. The proximate composition, protein content, antioxidant activity and iron (Fe) content were analyzed and optimized using minitab 22. Consumer purchase intention was evaluated using Partial Squares Structural Equation Modeling (PLS-SEM) based on responses from 120 parents. The results showed that the combination of corn flour and *A. platensis* granules had a significantly affected on the nutritional content of cookies. The optimum formulation was obtained at a corn flour concentration of 43.35% and an *A. platensis* granule concentration of 7.15%, with a composite desirability of 0.62. Experimental verification showed no significant differences between the predicted and actual values for all parameters tested ($p > 0.05$), confirming the adequacy of the RSM model. Per 24 g serving, the optimized cookies contributed 6.60–8.25% of the Recommended Dietary Allowance (RDA) for protein, 12.02–13.36% for fat, 32.80–46.86% for iron, 6.87–7.03% for carbohydrates, and 8.65–8.97% for energy. Furthermore, PLS-SEM analysis indicated that Health Consciousness and Subjective Norm had significant positive effect on Attitude, which in turn significantly influenced Purchase Intention. Overall, toddler cookies with corn flour and *A. platensis* granules demonstrated high potential as a nutrient dense locally sourced supplementary food with strong consumer market potential.

KEYWORDS: *Arthrospira platensis* granule, toddler cookies, corn flour, Response Surface Methodology, purchase intentio