

## **Pengaruh Fermentasi Telur Ayam Ras terhadap Profil Asam Amino pada Tepung Telur sebagai Alternatif Bahan Makanan bagi Penderita Stunting**

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### **ABSTRAK**

**Latar Belakang :** Kekurangan gizi kronis yang menyebabkan gangguan tumbuh kembang pada balita, ditandai dengan tinggi badan lebih rendah dari standar usianya, disebut sebagai kondisi stunting yang dapat menyebabkan gangguan fisik dan kognitif. Gangguan tersebut, salah satunya diakibatkan oleh rendahnya asupan protein dan asam amino yang berperan dalam sintesis hormon pertumbuhan. Telur ayam ras merupakan sumber protein hewani berkualitas tinggi yang kaya akan asam amino esensial, namun memiliki keterbatasan daya simpan. Salah satu metode untuk meningkatkan daya simpan dan nilai gizi telur adalah dengan mengolahnya menjadi tepung melalui proses fermentasi menggunakan *Saccharomyces cerevisiae*. Fermentasi dapat meningkatkan ketersediaan asam amino dan daya cerna protein, sehingga lebih optimal dalam pemenuhan gizi bagi penderita stunting. Penelitian ini bertujuan untuk menganalisis pengaruh fermentasi terhadap profil asam amino dalam tepung telur sebagai alternatif pangan bernutrisi untuk balita stunting.

**Tujuan:** Penelitian ini bertujuan untuk mengetahui pengaruh fermentasi telur ayam ras terhadap profil asam amino pada tepung telur sebagai alternatif bahan makanan penderita stunting.

**Metode:** Penelitian eksperimental dengan rancangan percobaan Rancangan Acak Lengkap (RAL) satu faktor yaitu fermentasi telur dengan perbedaan perlakuan konsentrasi ragi *Saccharomyces Cerevisiae* (0%, 2%, 4%, 6%). Kandungan asam amino diuji dan diukur menggunakan metode *High Performance Liquid Chromatography* (HPLC).

**Hasil:** Terdapat perbedaan yang signifikan ( $p < 0,05$ ) terhadap beberapa kandungan asam amino meliputi lisin, treonin, isoleusin, valin, fenilalanin, leusin, glisin, alanin, serin, asam glutamate, arginin, prolin dari pengaruh fermentasi menggunakan *saccharomyces cerevisiae*. Kandungan asam amino tertinggi terdapat pada perlakuan F1. Kadar asam amino esensial tertinggi adalah leusin, sedangkan kadar asam amino non – esensial tertinggi adalah asam glutamat.

**Simpulan:** Penelitian ini menunjukkan bahwa fermentasi secara signifikan meningkatkan kadar asam amino pada tepung telur dan dapat menjadi alternatif sumber asam amino bagi anak stunting. Tepung telur fermentasi dengan kandungan asam amino paling tinggi terdapat pada perlakuan F1, yaitu sebesar 33,5% dibandingkan perlakuan F0 sebagai kontrol sebesar 18,24% dengan komposisi telur 95%, ragi *Saccharomyces Cerevisiae* 2%, asam sitrat 1%, dan gula 2%. Kandungan asam amino esensial tertinggi adalah leusin, sedangkan kandungan asam amino non – esensial tertinggi adalah asam glutamat.

**Kata Kunci:** Stunting, asam amino, telur, fermentasi, *Saccharomyces cerevisiae*.

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# The Effect of Broiler Egg Fermentation on the Amino Acid Profile of Egg Flour as a Nutritional Alternative for Stunted Children

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## ABSTRACT

**Background:** Chronic malnutrition that causes growth and development disorders in toddlers, characterized by a height lower than the age standard, is referred to as stunting, which can lead to physical and cognitive impairments. One of the causes of this condition is insufficient intake of protein and amino acids, which play a crucial role in the synthesis of growth hormones. Broiler eggs are a high-quality source of animal protein rich in essential amino acids, but they have limited shelf life. One method to extend the shelf life and improve the nutritional value of eggs is by processing them into flour through fermentation using *Saccharomyces cerevisiae*. Fermentation can increase the availability of amino acids and protein digestibility, making it more optimal for meeting the nutritional needs of stunted children. This study aims to analyze the effect of fermentation on the amino acid profile in egg flour as a nutritious food alternative for stunted children.

**Objective:** This study aims to determine the effect of broiler egg fermentation on the amino acid profile in egg flour as an alternative food ingredient for stunted children.

**Methods:** An experimental study using a completely randomized design (CRD) with one factor, namely egg fermentation with varying concentrations of *Saccharomyces cerevisiae* yeast (0%, 2%, 4%, 6%). The amino acid content was tested and measured using High Performance Liquid Chromatography (HPLC).

**Results:** There was a significant difference ( $p < 0.05$ ) in several amino acid contents, including lysine, threonine, isoleucine, valine, phenylalanine, leucine, glycine, alanine, serine, glutamic acid, arginine, and proline, due to the effect of fermentation using *Saccharomyces cerevisiae*. The highest amino acid content was found in the F1 treatment. The highest essential amino acid content was leucine, while the highest non-essential amino acid content was glutamic acid.

**Conclusion:** This study shows that fermentation significantly increases the amino acid content in egg flour and can serve as an alternative source of amino acids for stunted children. The fermented egg flour with the highest amino acid content was found in the F1 treatment, which was 33.5% compared to the F0 control treatment at 18.24%, with a composition of 95% egg, 2% *Saccharomyces cerevisiae* yeast, 1% citric acid, and 2% sugar. The highest essential amino acid was leucine, while the highest non-essential amino acid was glutamic acid.

**Keywords:** Stunting, amino acids, eggs, fermentation, *Saccharomyces cerevisiae*.

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