

PRETREATMENT METHOD FOR ENHANCING QUALITY AND PREVENTING SUGAR BLOOMING OF DRIED BANANAS IN INDUSTRIAL PRODUCTION

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**DEPARTMENT OF AGROINDUSTRIAL TECHNOLOGY
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ABSTRACT

MUHAMMAD FAUZAN AL FAHRIZI. Pretreatment Method for Enhancing Quality and Preventing Sugar Blooming of Dried bananas in Industrial Production. Supervised by ONO SUPARNO and ENDANG WARSIKI.

Hillkoff is a leading agro-industry based in Chiang Mai, Thailand, and is recognized for its innovative dried banana products. Due to their naturally low moisture content, these bananas are prone to sugar bloom, a white crystalline surface layer often mistaken for mold. The visual defect can reduce consumer confidence and product desirability. This study investigated the effect of various pretreatment methods on sugar bloom reduction and product quality. Four treatment groups examined were a control group using Hillkoff's standard pretreatment (soaking in 0.2 g per liter potassium metabisulfite and 2 g per liter salt), blanching in hot water at 70 to 100 °C for 5 minutes, a group treated with 0.35 percent citric acid, and another with 10 percent sucrose. After solar drying, samples were analysed for water activity, moisture content, and reducing sugar. Product validation was conducted through quality scoring on day 45 and sensory analysis. The blanching group showed the poorest results, with all samples exhibiting sugar bloom and receiving the lowest sensory scores. In contrast, the citric acid group achieved the most favorable outcome, reducing sugar bloom occurrence by up to 71 percent and obtaining the highest quality and sensory ratings. These results indicate that citric acid pretreatment is a promising method for improving the visual quality, stability, and consumer acceptance.

Keywords: blanching, citric acid, pretreatment, dried banana, sucrose

ABSTRAK

MUHAMMAD FAUZAN AL FAHRIZI. Metode Pretreatment untuk Meningkatkan Kualitas dan Mencegah Sugar Bloom pada Pisang Kering dalam Produksi Industri. Dibimbing oleh ONO SUPARNO dan ENDANG WARSIKI.

Hillkoff merupakan perusahaan agroindustri terkemuka yang berbasis di Chiang Mai, Thailand, dan dikenal atas inovasinya dalam produk pisang kering energi surya. Karena kadar airnya yang secara alami rendah, pisang ini rentan mengalami sugar bloom, yaitu lapisan kristal putih di permukaan yang sering disalahartikan sebagai jamur. Cacat visual ini dapat menurunkan kepercayaan konsumen serta daya tarik produk. Penelitian ini mengevaluasi pengaruh berbagai metode pretreatment terhadap pengurangan sugar bloom dan peningkatan kualitas produk. Empat perlakuan yang diuji meliputi: kelompok kontrol menggunakan metode pretreatment standar Hillkoff (perendaman dalam 0,2 g/L kalium metabisulfid dan 2 g/L garam), blanching dalam air panas bersuhu 70 hingga 100 °C selama 5 menit, perlakuan dengan 0,35% asam sitrat, dan satu lagi dengan 10% sukrosa. Setelah proses pengeringan, sampel dianalisis untuk aktivitas air, kadar air, dan gula pereduksi. Validasi produk dilakukan melalui penilaian kualitas pada hari ke-45 serta uji sensori. Kelompok blanching menunjukkan hasil terburuk, dengan semua sampel mengalami sugar bloom dan memperoleh skor sensori terendah. Sebaliknya, kelompok asam sitrat memberikan hasil terbaik, dengan pengurangan sugar bloom hingga 71% dan memperoleh skor kualitas serta sensori tertinggi. Hasil ini menunjukkan bahwa pretreatment menggunakan asam sitrat merupakan metode yang menjanjikan untuk meningkatkan tampilan visual, kestabilan produk, dan penerimaan konsumen.

Kata kunci: asam sitrat, blanching, pisang kering tenaga surya, pretreatment, sukrosa



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PRETREATMENT METHOD FOR ENHANCING QUALITY AND PREVENTING SUGAR BLOOMING OF SOLAR-DRIED BANANAS IN INDUSTRIAL PRODUCTION

MUHAMMAD FAUZAN AL FAHRIZI

Undergraduate Final Project One of the requirements for
obtaining a Bachelor of Engineering Degree with Honours in
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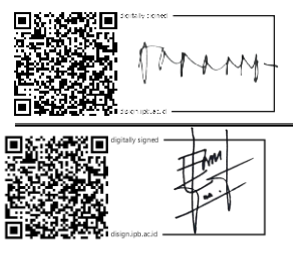
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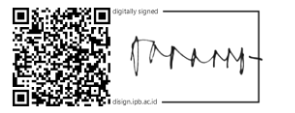
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PREFACE

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Bogor, August 2025

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