

OPTIMASI PRODUK NANAS KERING *FREEZE-DRIED* MENGGUNAKAN METODE TAGUCHI: PENGARUH KETEBALAN DAN PERLAKUAN AWAL

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ABSTRAK

Nanas kering dihasilkan melalui proses pengeringan beku. Namun, nanas kering yang ada di pasaran kurang menarik, kusam, dan teksturnya keras. Hal ini dikarenakan kadar air nanas madu tinggi yaitu sekitar 85,3% sehingga membuat karakteristik mutunya tidak sesuai. Maka dari itu, dilakukan pengembangan nanas kering *freeze-dried* dengan perlakuan ketebalan pematangan buah dan perendaman larutan sebelum pengeringan beku. Tujuan penelitian ini yaitu untuk mengevaluasi pengaruh ketebalan potongan buah, konsentrasi larutan kapur sirih, dan konsentrasi larutan gula terhadap karakteristik mutu nanas kering menggunakan *freeze-drying* serta mengetahui formulasi terbaik. Penelitian ini menggunakan 3 faktor dan 3 level yaitu ketebalan irisan buah (5 mm:7 mm:9 mm), konsentrasi larutan kapur sirih (0,5%: 1%:1,5%), dan konsentrasi larutan gula (40%:50%:60%). Penelitian menggunakan metode Taguchi dengan matriks *orthogonal array* L_9 . Pengujian yang dilakukan pada nanas kering yaitu kadar air, kadar brix, *fracturability*, warna, dan hedonik. Data pengujian kemudian dianalisis menggunakan rasio S/N dan *Multi Response Performance Index* untuk mengetahui formula terbaik. Formula terbaik dengan perlakuan ketebalan irisan 5 mm, konsentrasi kapur sirih 1,5%, dan konsentrasi larutan gula 60% menghasilkan kadar air 5,59%, kadar brix 13,27°Bx, dan *fracturability* 3,59 N. Berdasarkan ketiga faktor, faktor yang paling berpengaruh signifikan (<0,05) dengan kontribusi sebesar 55,07% terhadap karakteristik mutu nanas kering menggunakan *freeze-dried* yaitu ketebalan irisan buah.

Kata kunci: ketebalan buah, nanas madu, pengeringan beku, perlakuan awal

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OPTIMIZATION OF FREEZE-DRIED PINEAPPLE PRODUCTS USING TAGUCHI METHOD: THE EFFECT OF THICKNESS AND PRE-TREATMENT

by

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ABSTRACT

Dried pineapple is produced through a freeze-drying process. However, the dried pineapple in the market is unattractive, dull and hard in texture. This is due to the high moisture content of honey pineapple, which is around 85.3%, making its quality characteristics unsuitable. Therefore, the development of freeze-dried pineapple was carried out with the treatment of fruit cutting thickness and soaking solution before freeze-drying. The purpose of this research is to determine the effect of fruit cutting thickness, concentration of calcium hydroxide solution, and concentration of sugar solution on freeze-dried pineapple on the quality characteristics of freeze-dried pineapple using freeze drying and determining the best formulation. This study used 3 factors and 3 levels, which are the fruit slice thickness (5 mm:7 mm:9 mm), concentration of calcium hydroxide solution (0.5%:1%:1.5%), and concentration of sugar solution (40%:50%:60%). The study used Taguchi method with L₉ orthogonal array matrix. Measurement conducted on dried pineapple were moisture content, brix content, fracturability, color, and hedonics. The data was then analyzed using the S/N ratio and Multi Response Performance Index to determine the best formula. The best formula with 5 mm slice thickness, 1.5% calcium hydroxide concentration, and 60% sugar solution concentration produced 5.59% moisture content, 13.27°Bx brix content, and 3.59 N fracturability. Based on the three factors, the most significant factor (<0.05) with a contribution of 55.07% to the quality characteristics of freeze-dried pineapple using freeze-dried is the thickness of the fruit slices.

Keywords: *freeze drying, fruit thickness, pineapple, pre-treatment*

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