KINETIKA SIFAT FISIK DAN KIMIA GULA SEMUT SELAMA PROSES PENGOLAHAN MENGGUNAKAN KRISTALISATOR PUTAR DENGAN BAHAN BAKU NIRA SEGAR DAN GULA CETAK

INTISARI

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Gula semut merupakan salah satu jenis gula dengan bahan baku nira kelapa berbentuk butiran. Pembuatan gula semut saat ini masih menggunakan cara tradisional sehingga produk yang dihasilkan belum baik. Salah satu upaya untuk meningkatkan kualitas produk gula semut yaitu dilakukan evaluasi mengenai kinetika selama proses pengolahan. Tujuan penelitian ini adalah menentukan kinetika proses pengolahan gula semut menggunakan *pan evaporator* dan kristalisator putar. Pembuatan gula semut menggunakan variable penelitian bahan baku yaitu, nira dan gula cetak. Selama proses pembuatan gula semut diamati parameter mutu fisik dan kimia meliputi rendemen, warna, kadar air, *fineness modulus* , diameter rerata, gula reduksi, gula total, kadar abu, kadar antioksidan, dan nilai pH. Data dianalisis dengan kinetika avrami dan aplikasi *statistical package for the social sciences* (SPSS).

Hasil penelitian didapatkan rendemen, warna, kadar air, *fineness modulus*, diameter rerata sercara berturut-turut yaitu, nilai a) rendemen sebesar 66,93% (gula cetak) dan 16,13% (nira). b) Hasil uji warna dengan L*, a*, b* memiliki warna kuning kecoklatan. c) kadar air 1,98% (nira), 2,18 % (gula cetak), d) *fineness modulus* 5,70 (gula cetak) dan 5,34 (nira). e) diameter rerata 5,40 mm (gula cetak) dan 4,22 mm (nira). Rerata nilai kuantitatif terkait dengan karakteristik kimia gula semut meliputi a) gula reduksi 5,83% (nira), 5,71% (gula cetak) dan b) gula total 95,51% (nira), 95,37% (gula cetak) dan c) kadar abu 2.09% (nira), 2,45% (gula cetak) d) kadar antioksidan 8,027% (nira), 11,22% (gula cetak), dan e) nilai pH 5,92 % (nira), 5,70% (gula cetak).

Kata kunci : nira segar, gula cetak, evaporasi, kristalisasi, gula semut, kinetika

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KINETICS OF PHYSIC AND CHEMICALS PROPERTIES OF PALM SUGAR DURING PROCESSING USING ROTARY CRYSTALLIZERS WITH FRESH SAP AND MOLDED SUGAR AS RAW MATERIALS

ABSTRACT

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Palm sugars is one type of sugar with palm sap as raw materials in the form of granules. The making of palm sugar is still traditionally so the resulting product is still not good. One of the efforts to improve the quality of palm sugar products, it is necessary to evaluate the kinetics of the manufacturing process. The purpose of this study was to determine the kinetics of the process of making granulated sugar using a pan evaporator and manual crystallization so that it can increase its productivity and can be utilized by producers of granulated sugar. The variable reserach of palm sugar in this study used fresh sap and molded palm. During the process of making palm sugar, physical and chemical properties were observed including yield, color, moisture content, *fineness modulus*, average diameter, reducing sugar, total sugar, ash content, antioxidant content, and pH value. The data were analyzed by Avrami kinetics and the application of the statistical package for the social sciences (SPSS).

The results showed that yield, color, moisture content, *fineness modulus* , average diameter, respectively, namely, the value of a) yield of 66.93% (molded sugar) and 16.13% (sap). b) The results of the color test with L*, a*, b* have a brownish yellow color. c) water content 1.98% (sap), 2.18% (molded sugar), d) *Fineness modulus* 5.70 (molded sugar) and 5.34 (sap). e) the average diameter is 5.40 mm (molded sugar) and 4.22 mm (sap). The average quantitative values related to the chemical characteristics of ant sugar include a) 5.83% reducing sugar (sap), 5.71% (printed sugar) and b) 95.51% total sugar (sap), 95.37% (printed sugar).) and c) ash content of 2.09% (sap), 2.45% (printed sugar) d) antioxidant content of 8.027% (sap), 11.22% (printed sugar), and e) pH value of 5.92% (sap), 5.70% (printed sugar).

Key words : fresh sap, molded sugar, evaporation, crystallization, palm sugar,kinetics

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