

**KAJIAN MATEMATIS KARAKTERISTIK BUBUK KAKAO INSTAN
DENGAN VARIASI KADAR LEMAK KAKAO, DURASI
PENGERINGAN, DAN KADAR MALTODEKSTRIN MENGGUNAKAN
CONTINUOUS-TYPE STEAM JET AGGLOMERATOR**

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INTISARI

Tercatat menurut *World Cacao Foundation* (2012), produksi biji kakao Indonesia adalah sebanyak 430.000 ton. Keadaan tersebut memungkinkan bagi masyarakat Indonesia untuk memproduksi berbagai macam olahan dari bahan baku kakao. Salah satunya yaitu olahan bubuk minuman kakao instan. Minuman kakao sangat diminati oleh konsumen, mengingat Indonesia memiliki suhu lingkungan yang cukup tinggi. Tujuan penelitian ini yaitu mengkaji secara matematis, karakteristik bubuk kakao instan yang dibuat menggunakan *continuous-type steam jet agglomerator*. Variabel yang digunakan dalam penelitian ini yaitu kadar lemak (bubuk kakao dari Chockles (11%), bubuk kakao dari Pusat Penelitian Kopi dan Kakao Jember (27%), serta campuran keduanya, kemudian durasi pengeringan (4 jam, 6 jam, dan 8 jam) dan kadar maltodekstrin (25%,30%,35%, dan 40%). Mesin ini dirancang mampu meningkatkan kelarutan bubuk kakao, karena adanya proses aglomerasi. Suhu uap air (*steam*) yang digunakan saat proses produksi yaitu sekitar (80-95)⁰C, dengan tekanan sebesar 1 bar.

Hasil penelitian ini menunjukkan bahwa ketiga variabel dan interaksinya mempengaruhi karakteristik bubuk kakao instan. Dapat dilihat dari beberapa karakteristik jika dibandingkan dengan bahan kontrol (tanpa dikenai *steam*) seperti nilai *solubility* yang lebih tinggi (40-65)%, nilai *dispersibility* yang lebih rendah (3-5)% dan ukuran partikel semakin besar (0,105-0,107)mm. Diperoleh sampel terbaik dari penelitian ini yaitu variasi kadar lemak Chockles, durasi pengeringan selama 8 jam, dan kadar maltodekstrin sebanyak 35%.

Kata kunci : Bubuk Kakao Instan, Maltodekstrin, *Continuous-Type Steam Jet Agglomerator*, Karakteristik

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**MATHEMATIC STUDY OF INSTANT COCOA POWDER WITH
VARIATIONS OF COCOA FAT CONTENT, DRYING DURATION, AND
MALTODEXTRINE CONTENT USING CONTINUOUS-TYPE STEAM
JET AGGLOMERATOR**

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ABSTRACT

According to the World Cacao Foundation (2012), Indonesian cocoa bean production is 430,000 tons. This situation makes it possible for the Indonesian people to produce various kinds of processed raw materials from cocoa. One of them is processed instant cocoa powder. Cocoa drinks are in great demand by consumers, considering that Indonesia has a high enough ambient temperature. The purpose of this study is to examine mathematically, the characteristics of instant cocoa powder made using continuous-type steam jet agglomerator. The variables used in this study were fat content (cocoa powder from Chockles (11%), cocoa powder from the Coffee and Cocoa Research Center Jember (27%), and a mixture of both, then the duration of drying (4 hours, 6 hours, and 8 hours) and maltodextrine content (25%, 30%, 35%, and 40%). This machine is designed to increase the solubility of cocoa powder, due to the agglomeration process. The temperature of water vapor (steam) used during the production process is around (80-95) 0C, with a pressure of 1 bar.

The results of this study indicate that the three variables and their interactions affect the characteristics of instant cocoa powder, it can be seen from several characteristics when compared to control materials (without steam) such as higher solubility values (40-65) %, lower dispersibility value (3-5)% and greater particle size (0.105-0.107) mm. The best samples obtained from this study are variations in fat content of Chockles, duration of drying for 8 hours, and levels of maltodextrine as much as 35%.

Keywords : Instant Cocoa Powder, Maltodextrine, Continuous-Type Steam Jet Agglomerator, Characteristics

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