

ABSTRAK

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Judul : Aplikasi Alat Pengering *Spray Dryer* Pada Pembuatan Tepung Gula Tebu
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Gula merupakan salah satu kebutuhan pokok masyarakat dengan tingkat kebutuhan yang tinggi yang digunakan sebagai pemanis. Berbagai hasil olahan gula tersedia di pasaran dalam bentuk gula cair, gula kristal, gula pasta dan tepung gula. Namun, hasil olahan gula dalam bentuk gula cair, gula pasta dan gula kristal memiliki kekurangan yaitu tidak tahan lama karena kandungan air yang tinggi sedangkan tepung gula tebu memiliki ketahanan yang lebih lama karena kandungan air yang rendah. Tepung gula tebu dapat dihasilkan melalui teknologi pengawetan dengan alat pengering *spray drying*. Metode *spray drying* memiliki kelebihan yaitu dapat digunakan untuk kapasitas besar, cocok untuk bahan yang sensitif terhadap pemanasan, prosesnya berlangsung cepat sehingga kualitas produk dapat dipertahankan (cita rasa, nilai gizi dan warna). Terdapat beberapa faktor yang mempengaruhi pembuatan tepung gula tebu yaitu temperatur udara pengering, laju alir umpan, konfigurasi pada *chamber* serta penambahan bahan pendukung meliputi maltodekstrin dan Na-metabisulfit. Tujuan umum penelitian ini untuk membuat tepung gula tebu menggunakan alat pengering *spray dryer* dan tujuan khusus penelitian ini untuk menentukan pengaruh temperatur udara pengering dan laju alir umpan terhadap kualitas sesuai SNI 01-3821-1995 (kadar air, kadar abu, kadar sukrosa, kadar gula pereduksi, kadar Pb, kadar Cu, kadar Zn dan warna yang dihasilkan) dan kuantitas tepung gula tebu ditinjau dari % *yield* produk serta menentukan pengaruh penambahan 15% maltodekstrin pada kondisi terbaik. Berdasarkan hasil penelitian yang telah dilakukan didapat kondisi terbaik pada temperatur 150°C dan laju alir umpan 1,5 mL/menit, menghasilkan tepung gula tebu dengan kadar air 2,18%, kadar abu 0,80%, kadar sukrosa 70,9998%, kadar gula pereduksi 1,9725%, kadar Pb < 0,4663 mg/Kg, kadar Cu < 0,0932 mg/Kg, kadar Zn 1,8282 mg/Kg, *yield* kering 18,81%, *yield* basah 3,67% serta warna yang dihasilkan putih kekuningan. Berdasarkan perolehan diatas maka kualitas tepung gula tebu yang dihasilkan memenuhi SNI 01-3821-1995 kecuali warna, % kadar air, % gula pereduksi dan % sukrosa.

Kata kunci: *Nozzle* fluida, *spray dryer*, tepung gula tebu

ABSTRACT

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Sugar is one of the basic needs of the community with a high level of needs which is used as a sweetener. Various processed sugar products are available in the market in the form of liquid sugar, crystal sugar, pasta sugar and sugar flour. However, processed sugar in the form of liquid sugar, pasta sugar and crystal sugar has the disadvantage of not being durable because of the high water content while sugar cane flour has a longer resistance due to the low water content. Sugar cane flour can be produced one of them using a spray dryer. Spray Drying method has the advantage that can be used for large capacity, suitable for materials that are sensitive to heating, the process is fast so that the quality of products can be maintained (taste, nutritional value and color). There are several factors affecting the manufacture of sugar cane flour, the temperature of the dryer air, feed flow rate, the configuration of the Chamber and the addition of supporting materials include maltodextrin and Na-metabisulfite. The general purpose of this research is to make sugar cane flour using the spray dryer dryer and special purpose of this research to determine the influence of the temperature of the dryer air and the flow rate of the bait to the appropriate quality of SNI 01-3821-1995 (water content, Ash content, sucrose rate, reducing sugar content, Pb levels, Cu levels, Zn levels and the resulting colour) and the quantity of sugar cane flour are reviewed from the % yield of the product and determine the effect of adding 15% maltodextrin to the best condition. Based on the results of the research that has been done for the best conditions at 150 °c and feed flow rate 1.5 mL/min, produce sugar cane flour with water content 2.18%, ash content 0.80%, sucrose content 70,9998%, reducing sugar content 1,9725%, Pb content < 0.4663 mg/kg, Cu content < 0.0932 mg/kg, Zn content 1.8282 mg/kg, dry yield 18.81%, wet yield 3.67% and color produced yellowish white. Based on the above acquisition, the quality of the produced sugar cane flour meets SNI 01-3821-1995 except colour, % water content, %sucrose content and % reducing sugar content.

Keywords: Fluid nozzle, spray dryer, sugar cane flour.