

INTISARI

Penggunaan pewarna sintetis saat ini semakin luas terutama dalam makanan dan minuman, yang bersifat karsinogenik apabila dikonsumsi secara berlebih. Sehingga, perlu dikembangkan sumber alternatif pewarna alami yang aman untuk digunakan, seperti betalain yang merupakan pigmen yang memberikan warna merah dan kuning pada tanaman. Salah satu sumber betalain yang tinggi adalah buah naga merah (*Hylocereus undatus*), yang berpotensi sebagai pewarna alami. Penggunaan *drying aid maltodextrin* berfungsi untuk meningkatkan titik leleh serbuk, sedangkan penggunaan gum arab berfungsi untuk menurunkan higroskopisitas serbuk. Penelitian ini bertujuan untuk mengamati efek kombinasi *drying aid maltodextrin* dan gum arab dalam proses *spray dry* jus buah naga untuk menghasilkan serbuk pewarna alami.

Penelitian dilakukan dengan metode *Simplex Lattice Design* dengan *drying aid maltodextrin* dan gum arab pada jus buah naga merah yang telah disaring bijinya sesuai 8 formula dari *software Design Expert v.9.0.4.1*. *Spray drying* dilakukan pada suhu *inlet* 165°C, suhu *outlet* 86°C dan kecepatan alir 2,5. Serbuk yang dihasilkan kemudian diuji densitas warna, sifat higroskopisitas, sifat alir dan *moisture content*. Hasil uji dianalisis dengan *software Design Expert* untuk mendapatkan komposisi *drying aid* dengan respon terbaik.

Berdasarkan penelitian, hasil uji fisik yang didapatkan tidak memenuhi kriteria yang disyaratkan, dan data yang didapat fluktuatif sehingga *software Design Expert 9®* tidak mampu menghasilkan formula optimum.

Kata Kunci : *Maltodextrin, Gum Arab, Spray Drying, Hylocereus undatus*

DRYING AID EFFECT OF MALTODEXTRIN AND ARABIC GUM IN RED DRAGON FRUIT JUICE SPRAY DRYING AS NATURAL COLORANT WITH SIMPLEX LATTICE DESIGN METHOD

Roni Ferdian
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Synthetic colorant that are widely used in food and medicine industry, could have carcinogenic in prolonged consumptions. As the result, natural colorant pigments were sought to replace synthetic colorant. Betalains, that were contained in red dragon fruits, were an example of plant pigment that could potentially become natural colorant. Maltodextrin were used as drying aid to increase melting point of the powder, and Arabic gum were used to decrease hygroscopicity of maltodextrin. In this research, effect of addition of maltodextrin and gum arab on red dragon fruits juice spray drying as natural colorant were observed.

Simplex lattice design were applied to determine the optimum composition of maltodextrin and Arabic gum on red dragon druit juice using Design Expert v.9.0.4.1 software to generate 8 formulation used in the research. The inlet temperature, exhausted temperature and feed rate (165°C, 86°C, 2.5) were used in the spray drying system. The physical properties (color density, hygroscopicity, flowability, and moisture content) of powder obtained were evaluated and analyzed with Design Expert to acquire the best formulation.

The powder obtained in this research could not met with the required criteria, and the data obtained were fluctuated that Design Expert couldn't suggest the optimum formulation.

Key Words : Maltodextrin, Gum Arab, Spray Drying, *Hylocereus undatus*