

Pengembangan Minuman Serbuk Instan Pisang *Cavendish* dan Buah Naga Merah dengan Penambahan Hidrolisat Protein Okara Metode *Foam Mat Drying*

INTISARI

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Pisang *cavendish* dan buah naga merah memiliki kandungan vitamin, serat, dan antioksidan. Namun buah tersebut mudah membusuk, sehingga diperlukan pengolahan untuk memperpanjang umur simpan. Minuman serbuk instan menggunakan *foam mat drying* digunakan karena prosesnya sederhana, biaya rendah, serta cocok untuk bahan yang peka terhadap suhu tinggi. Hidrolisat protein okara digunakan sebagai bahan pembusa karena memiliki sifat fungsional yang baik. Sehingga tujuan dari penelitian ini untuk mengetahui pengaruh penambahan hidrolisat protein okara terhadap sifat fisikokimia, uji kesukaan, dan umur simpan dari minuman serbuk instan.

Tahapan pertama dari penelitian ini yaitu pengeringan okara menggunakan *cabinet dryer*, selanjutnya proses hidrolisis okara dengan enzim papain pada suhu 40°C selama 120 menit dan hidrolisat cair dikeringkan menggunakan *spray dryer*. Tahapan kedua pembuatan minuman serbuk instan menggunakan *foam mat drying* dengan 4,32% bahan pembusa hidrolisat protein okara dan isolat protein kedelai. Busa dikeringkan menggunakan loyang dengan ketebalan busa 3 mm pada suhu 60°C selama 8 jam kemudian dihaluskan dan diayak.

Hasil penelitian ini menunjukkan bahwa minuman serbuk instan pisang *cavendish* dan buah naga merah menggunakan *foam mat drying* dengan penambahan hidrolisat protein okara menghasilkan kadar air sebesar 2,81%, WAI 0,69 g/g, dan *bulk density* 0,39 g/cm³ serta secara signifikan ($p < 0,05$) dapat meningkatkan nilai WSI menjadi 81,42%, aktivitas antioksidan 49,86%, dan umur simpan selama 144 hari. Hasil analisis GC-MS mengidentifikasi 82 senyawa volatil dan sebagian besar berasal dari golongan ester yang memberikan aroma *fruity*. Uji kesukaan pada minuman serbuk instan dengan penambahan hidrolisat protein okara memiliki skor rata-rata 4,40 (netral) hingga 5,06 (agak suka).

Kata kunci: hidrolisis, okara, minuman instan, *foam mat drying*, umur simpan

Development of Cavendish Banana and Red Dragon Fruit Instant Powdered with the Addition of Okara Protein Hydrolysate Using Foam Mat Drying

ABSTRACT

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Cavendish banana and red dragon fruit contain various nutrients such as vitamins, fibre and antioxidants. However, these fruits are easily damaged and requires processing to extend the shelf life. Instant powder drink using foam mat drying is a method that can be used because the process is simple, low cost, and suitable for drying materials that are sensitive to high temperatures. Okara protein hydrolysate is used as a foaming agent because it has good functional properties. The purpose of this study was to determine the effect of the addition of okara protein hydrolysate on the physicochemical properties, acceptance test, and shelf life of instant powder drinks.

The first stage of this research was the drying of okara using a cabinet dryer, followed by the hydrolysis process of okara with papain enzyme at 40°C for 120 minutes and the liquid hydrolysate was dried using a spray dryer. The second stage of instant powder beverage manufacturing used foam mat drying with 4.32% of okara protein hydrolysate and soy protein isolate. The foam was dried using a baking tray with a foam thickness of 3 mm at 60°C for 8 hours then mashed and sieved.

The results showed that cavendish banana and red dragon fruit instant powder drink using foam mat drying with the addition of okara protein hydrolysate produced a moisture content of 2.81%, WAI of 0.69 g/g, and bulk density of 0.39 g/cm³ and significantly ($p < 0.05$) increased the WSI value to 81.42%, antioxidant activity of 49.86%, and shelf life of 144 days. GC-MS analysis identified 82 volatile compounds, most of which played contributed to the fruity aroma of instant powder drink. The liking test on instant powder drink with the addition of okara protein hydrolysate had an average score of 4.40 (neutral) to 5.06 (slightly like).

Keyword: hydrolysis, okara, instant drink, foam mat drying, shelf life