RINGKASAN

Jahe merah (*Zingiber officinale Rosc. Var. Rubrum*) merupakan salah satu tanaman rempah yang memiliki potensi untuk diformulasikan menjadi minuman kesehatan yang memiliki manfaat sebagai antioksidan yang efektif. Alasan utama pembuatan serbuk jahe merah gula aren adalah gaya hidup masyarakat modern menginginkan produk makanan yang tidak hanya memerhatikan aspek gizi, tetapi juga harus praktis, cepat disajikan, memiliki masa simpan panjang, dan tidak memerlukan ruang penyimpanan yang besar. Salah satu teknik pengeringan yang dapat digunakan dalam pembuatan serbuk jahe instan adalah metode *foam mat drying* menggunakan bahan pembusa putih telur dan bahan pengisi *whey protein powder*. Penelitian ini bertujuan untuk 1) Mengetahui pengaruh konsentrasi putih telur terhadap karakteristik fisikokimia dan organoleptik serbuk jahe merah gula aren, 2) Mengetahui pengaruh konsentrasi *whey protein powder* terhadap karakteristik fisikokimia dan organoleptik serbuk jahe merah gula aren, dan 3) Mendapatkan kombinasi perlakuan terbaik konsentrasi putih telur dan *whey protein powder* terhadap karakteristik fisikokimia dan organoleptik serbuk jahe merah gula aren.

Penelitian bersifat eksperimental menggunakan Rancangan Acak Lengkap (RAL) dengan dua faktor, yaitu konsentrasi putih telur (5%, 10%, 15%) dan *whey protein powder* (10%, 15%, 20%). Variabel yang diamati pada penelitian ini adalah variabel fisikokimia dan organoleptik. Variabel fisikokimia meliputi kadar air, kadar abu, rendemen, warna, kelarutan, dan pH. Selain itu, akan dilakukan uji total fenol dan aktivitas antioksidan. Uji organoleptik dilakukan terhadap rasa, warna, aroma jahe, aroma amis, dan kesukaan.

Hasil penelitian menunjukkan bahwa konsentrasi putih telur berpengaruh terhadap kadar air, kadar abu, rendemen, pH, aktivitas antioksidan, organoleptik aroma jahe, rasa, dan kesukaan pada serbuk jahe merah gula aren. Serbuk jahe merah gula aren dengan konsentrasi putih telur 10% memiliki kadar air paling rendah. Konsentrasi *whey protein powder* berpengaruh terhadap kadar air, kadar abu, rendemen, warna kekuningan (b*), pH, total fenol, aktivitas antioksidan, organoleptik aroma jahe, rasa, dan kesukaan pada serbuk jahe merah gula aren. Serbuk jahe merah gula aren dengan konsentrasi *whey protein powder* 10% memiliki kadar air paling rendah. Berdasarkan uji indeks efektivitas, kombinasi terbaik serbuk jahe merah gula aren adalah konsentrasi putih telur 10% dan *whey protein powder* 15% dengan karakteristik fisikokimia memiliki kandungan kadar air 4,71%, kadar abu 4,61%, rendemen 21,76%, tingkat kecerahan (L*) 69,15, warna kemerahan (a*) 5,5, warna kekuningan (b*) 16,75, kelarutan 82,52%, pH 6,61, total fenol 0,41 mg GAE/g, dan aktivitas antioksidan (IC50) 221,85 ppm. Sementara pada karakteristik organoleptik memiliki warna cokelat kekuningan, aroma agak khas jahe, tidak terdapat aroma amis, rasa agak pedas jahe dan agak disukai oleh panelis.

SUMMARY

Red ginger (Zingiber officinale Rosc. Var. Rubrum) is a spice plant with potential health benefits, particularly as an effective antioxidant when formulated into a health drink. The primary motivation for producing ginger powder beverages is following the modern lifestyle that demands not only nutritional value but also convenience, quick preparation, long shelf life, and minimal storage space. Foam mat drying is a suitable technique for making instant ginger powder, using egg white as a foaming agent and whey protein powder as a filler. This research aims to (1) Determine the effect of egg white concentration on the physicochemical and organoleptic characteristics of red ginger powder drink with palm sugar, (2) Determine the effect of whey protein powder concentration on the physicochemical and organoleptic characteristics of red ginger powder drink with palm sugar, and (3) Identify the optimal combination of egg white and whey protein powder concentrations for the best physicochemical and organoleptic characteristics of red ginger powder drink with palm sugar.

This experimental research used a Completely Randomized Design (CRD) with two factors: egg white concentration (5%, 10%, 15%) and whey protein powder (10%, 15%, 20%). Observed variables included physicochemical properties such as moisture content, ash content, yield, color, solubility, and pH, as well as total phenolic content and antioxidant activity. Organoleptic tests assessed taste, color, ginger aroma, fishy odor, and overall preference.

Results indicated that egg white concentration significantly affected moisture content, ash content, yield, pH, antioxidant activity, and organoleptic properties including ginger aroma, taste, and overall preference. Red ginger powder powder drink with palm sugar with 10% egg white concentration has the lowest water content. Whey protein powder concentration significantly impacted moisture content, ash content, yield, yellow color (b value), pH, total phenol, antioxidant activity, and organoleptic properties including ginger aroma, taste, and overall preference. Red ginger powder powder drink with palm sugar with 10% whey protein powder concentration has the lowest water content. The most optimal combination based on the effectiveness index was 10% egg white and 15% whey protein powder, yielding physicochemical characteristics of 4.71% moisture content, 4.61% ash content, 21.76% yield, 69.15 L* color, 5.5 a* color, 16.75 b* color, 82.52% solubility, 6.61 pH, 0.41 mg GAE/g total phenol, and 221.85 ppm antioxidant activity (IC50). Based on the organoleptic analysis, the product had a yellowish-brown color, a slightly distinctive ginger aroma, no fishy odor, a moderately spicy ginger taste, and was moderately preferred by the panelists.*