

RINGKASAN

Paparan radikal bebas akibat polusi udara, radiasi perangkat elektronik, kebiasaan merokok, serta proses pengolahan makanan bersuhu tinggi dapat memicu stres oksidatif dalam tubuh. Stres oksidatif berkontribusi terhadap proses penuaan dan berbagai penyakit degeneratif seperti kanker, diabetes, serta penyakit kardiovaskular. Upaya pencegahan dapat dilakukan melalui konsumsi pangan yang mengandung antioksidan alami. Ubi jalar ungu (*Ipomoea batatas L.*) merupakan sumber antosianin yang memiliki aktivitas antioksidan tinggi, sedangkan kayu manis (*Cinnamomum burmannii*) mengandung flavonoid, sinamaldehyd, dan eugenol yang juga bersifat antioksidan. *Cookies* merupakan produk pangan yang digemari dengan umur simpan relatif lama, namun masih didominasi oleh penggunaan tepung terigu impor. Penelitian ini bertujuan untuk mengetahui pengaruh substitusi tepung ubi jalar ungu dan penambahan bubuk kayu manis terhadap karakteristik kimia dan sensori *cookies*, serta menentukan kombinasi perlakuan terbaik.

Rancangan percobaan yang digunakan adalah Rancangan Acak Lengkap (RAL) dengan tiga kali ulangan. Faktor yang diteliti berupa substitusi tepung ubi jalar ungu (T) pada konsentrasi 50% (T1), 75% (T2), dan 100% (T3) serta faktor penambahan bubuk kayu manis (K) pada konsentrasi 0% (K1), 2,5% (K2), dan 5% (K3). Pada penelitian ini dilakukan pengamatan kimia berupa analisis kadar air, kadar serat kasar, dan aktivitas antioksidan (% inhibisi). Selain itu, pada variabel sensori diamati warna, aroma, rasa, tekstur, dan kesukaan keseluruhan. Sampel perlakuan terbaik yang diuji menggunakan indeks efektivitas kemudian dilakukan analisis proksimat (kadar air, protein total, lemak, abu, karbohidrat), dan aktivitas antioksidan (IC₅₀) kemudian dibandingkan dengan SNI 01-2973-2022.

Hasil penelitian menunjukkan bahwa substitusi tepung ubi jalar ungu berpengaruh nyata terhadap aktivitas antioksidan, kadar serat kasar, dan kadar air pada *cookies*. Interaksi antara kedua perlakuan tersebut berpengaruh nyata terhadap peningkatan aktivitas antioksidan dan kadar serat kasar. Penambahan bubuk kayu manis yang semakin tinggi dapat menyebabkan kenaikan nilai aktivitas antioksidan yang dihasilkan. Perlakuan terbaik berdasarkan karakteristik kimia dan sensori *cookies* didapatkan pada perlakuan substitusi tepung ubi jalar ungu 100% dengan penambahan bubuk kayu manis 2,5% dengan kadar air 4,46%, kadar abu 1,78%, kadar lemak 37,20%, kadar protein total 3,98%, kadar karbohidrat 52,58%, aktivitas antioksidan 44,97 ppm (sangat kuat), berwarna ungu kecoklatan (3,4), aroma agak kuat (3,3), rasa agak manis (3,2), tekstur remah (3,7), dan agak disukai panelis (3,1).

SUMMARY

*Exposure to free radicals due to air pollution, radiation from electronic devices, smoking habits, and high-temperature food processing can trigger oxidative stress in the body. Oxidative stress contributes to the aging process and the development of various degenerative diseases such as cancer, diabetes, and cardiovascular disease. Preventive efforts can be made through the consumption of foods that contain natural antioxidants. Purple sweet potato (*Ipomoea batatas* L.) is a source of anthocyanins with high antioxidant activity, while cinnamon (*Cinnamomum burmannii*) contains flavonoids, cinnamaldehyde, and eugenol, which also have antioxidant properties. Cookies are a popular food product with a relatively long shelf life, but they are still dominated by the use of imported wheat flour. This study aims to determine the effect of purple sweet potato flour substitution and the addition of cinnamon powder on the chemical and sensory characteristics of cookies, as well as to determine the best treatment combination.*

The experimental design used was a Completely Randomized Design (RAL) with three replications. The factors studied were the substitution of purple sweet potato flour (T) at concentrations of 50% (T1), 75% (T2), and 100% (T3), and the addition of cinnamon powder (K) at concentrations of 0% (K1), 2.5% (K2), and 5% (K3). Observations included chemical analyses such as moisture content, crude fiber content, and antioxidant activity (% inhibition). In addition, sensory variables were observed, including color, aroma, taste, texture, and overall acceptability. The best treatment sample, determined using the effectiveness index, was further analyzed for proximate composition (moisture, total protein, fat, ash, carbohydrate) and antioxidant activity (IC_{50}), and compared to SNI 01-2973-2022.

The results showed that purple sweet potato flour substitution had a significant effect on antioxidant activity, crude fiber content, and moisture content in the cookies. The interaction between the two treatments significantly affected antioxidant activity and crude fiber content. Increasing the amount of cinnamon powder added resulted in increased antioxidant activity. The best treatment based on chemical and sensory characteristics was the substitution of 100% purple sweet potato flour with the addition of 2.5% cinnamon powder, which produced cookies with 4.46% moisture, 1.78% ash, 37.20% fat, 3.98% total protein, 52.58% carbohydrate, antioxidant activity of 44.97 ppm (very strong), purplish-brown color (3.4), moderately strong aroma (3.3), slightly sweet taste (3.2), crumbly texture (3.7), and moderately liked by panelists (3.1).