RINGKASAN

Perubahan pola makan yang tidak sehat dapat menimbulkan masalah kesehatan metabolik dan meningkatkan risiko terhadap gangguan metabolisme, salah satunya ialah diabetes melitus tipe 2 (T2DM). Untuk mencegah atau mengelola T2DM diperlukan *cookies* yang kaya akan serat pangan dan protein dengan indeks glikemik rendah. Penelitian ini bertujuan untuk: 1) menentukan karakteristik *cookies* terpilih pada kombinasi perlakuan penambahan *puree* kacang lupin dan jenis pemanis; 2) menentukan karakteristik fisikokimia pada *cookies* terpilih; 3) menentukan pengaruh pemberian *cookies* terpilih terhadap respons gula darah tikus; dan 4) menentukan nilai indeks glikemik pada *cookies* terpilih.

Penelitian tahap satu dilakukan dengan rancangan acak kelompok faktorial dengan dua faktor, yaitu penambahan *puree* kacang lupin (10; 20; dan 30%), dan jenis pemanis (32% sukrosa dan 5% stevia). Penelitian tahap dua dilakukan dengan rancangan *post-test design* empat kelompok tikus (n = 12). Data yang diperoleh dianalisis menggunakan ANOVA dan apabila terdapat pengaruh perlakuan yang signifikan dilakukan uji DMRT pada taraf 95%.

Hasil penelitian ini menunjukkan karakteristik *cookies* terpilih diperoleh pada perlakuan penambahan *puree* kacang lupin sebanyak 30%, baik pada penggunaan 32% sukrosa maupun 5% stevia. Pada *cookies* dengan perlakuan 30% *puree* kacang lupin dan 32% sukrosa memiliki kadar air 6,69%, kadar abu 0,45%, kadar protein 7,95%, kadar lemak 25,15%, kadar karbohidrat 59,76%, serat pangan 3,12%, total energi 582,01 kkal/100 g, *hardness* 10,90 N, *gumminess* 4,39 N, *chewiness* 3,64 N, *adhesiveness* 0,02, dan *cohesiveness* 0,14. Selain itu, pada *cookies* dengan perlakuan 30% *puree* kacang lupin dan 5% stevia memiliki kadar air 12,45%, kadar abu 0,57%, kadar protein 7,92%, kadar lemak 24,74%, kadar karbohidrat 54,33%, serat pangan 4,22%, total energi 562,14 kkal/100 g, *hardness* 4,55 N, *gumminess* 2,42 N, *chewiness* 3,50 N, *adhesiveness* 0,02, dan *cohesiveness* 0,14. *Cookies* dengan perlakuan 30% *puree* kacang lupin dan 5% stevia menunjukkan penurunan kadar glukosa darah yang lebih rendah pada tikus normal dibandingkan *cookies* dengan perlakuan 30% *puree* kacang lupin dan 32% sukrosa, serta *cookies* kontrol. Hal ini menunjukkan bahwa *cookies* yang menggunakan perlakuan 30% *puree* kacang lupin dan 5% stevia efektif dalam menghambat peningkatan respons gula darah. Nilai indeks glikemik *cookies* dengan perlakuan 30% *puree* kacang lupin dan 5% stevia (22,39) menunjukkan nilai yang paling rendah apabila dibandingkan *cookies* dengan perlakuan 30% *puree* kacang lupin dan 32% sukrosa (31,41) maupun *cookies* kontrol (32,70).

SUMMARY

Dietary changes that lack nutritional balance can lead to metabolic health problems and increase the risk of metabolic disorders, including type 2 diabetes mellitus (T2DM). Cookies rich in dietary fiber and protein with a low glycemic index are necessary to prevent or manage T2DM. This study aims to: 1) determine the characteristics of selected cookies under a treatment combination of lupin bean puree addition and sweetener type; 2) determine the physicochemical characteristics of selected cookies; 3) determine the effect of giving selected cookies on the blood sugar response of rats; and 4) determine the glycemic index value of selected cookies.

The first stage of the research was conducted with a factorial group randomized design with two factors, namely the addition of lupin bean puree (10; 20; and 30%) and the type of sweetener (32% sucrose and 5% stevia). Phase two of the study was conducted with a post-test design of four groups of rats (n = 12). The data obtained were analyzed using ANOVA, and if there was a significant treatment effect, the DMRT test was conducted at the 95% level.

The results showed that the characteristics of the selected cookies were obtained in the treatment of adding 30% lupin bean puree, both in the use of 32% sucrose and 5% stevia. Cookies treated with 30% lupine nut puree and 32% sucrose have a moisture content of 6.69%, ash content of 0.45%, protein content of 7.95%, fat content of 25.15%, carbohydrate content of 59.76%, dietary fiber of 3.12%, total energy of 582.01 kcal/100 g, hardness of 10.90 N, gumminess of 4.39 N, chewiness of 3.64 N, adhesiveness of 0.02, and cohesiveness of 0.14. In addition, cookies treated with 30% lupin bean puree and 5% stevia have a moisture content of 12.45%, ash content of 0.57%, protein content of 7.92%, fat content of 24.74%, carbohydrate content of 54.33%, dietary fiber of 4.22%, total energy of 562.14 kcal/100 g, hardness of 4.55 N, gumminess of 2.42 N, chewiness of 3.50 N, adhesiveness of 0.02, and cohesiveness of 0.14. Cookies treated with 30% lupin bean puree and 5% stevia showed lower blood glucose levels in normal rats compared to cookies treated with 30% lupin bean puree and 32% sucrose and control cookies. This indicates that cookies made with 30% lupin bean puree and 5% stevia treatment are effective at inhibiting the increase in blood sugar response. The glycemic index value of cookies treated with 30% lupin bean puree and 5% stevia (22.39) showed the lowest value when compared to cookies treated with 30% lupin bean puree and 32% sucrose (31.41) and control cookies (32.70).