

## RINGKASAN

*Cookies* merupakan salah satu produk *bakery* dengan karakteristik tinggi kandungan gula, dimana sukrosa merupakan pemanis yang umum digunakan. Pada penelitian ini, digunakan pemanis stevia termasuk di dalamnya sorbitol dan eritritol yang rendah kalori dan indeks glikemik, serta tidak menyebabkan kerusakan gigi seperti pada penggunaan sukrosa. Pada penelitian ini juga digunakan tepung sorgum terfermentasi, karena tidak menyebabkan reaksi inflamasi, seperti pada penggunaan terigu. Penambahan kacang lupin pada penelitian ini digunakan untuk meningkatkan kandungan protein terlarut pada *cookies* sorgum terfermentasi yang dihasilkan. Tujuan dari penelitian ini adalah untuk mengetahui pengaruh dan menentukan kombinasi perlakuan terbaik dari penambahan kacang lupin dan konsentrasi pemanis yang mengandung stevia terhadap karakteristik fisikokimia dan sensoris *cookies* sorgum terfermentasi.

Rancangan percobaan yang digunakan adalah Rancangan Acak Kelompok (RAK) dengan dasar pengelompokan berdasarkan pembuatan *puree* kacang lupin dengan empat kali ulangan. Faktor yang diteliti berupa penambahan kacang lupin (L) dalam bentuk *puree* kacang lupin (L1) dan tepung kacang lupin (L2) dan faktor konsentrasi pemanis mengandung stevia (S) pada konsentrasi 4% (S1); 5% (S2); dan 6% (S3). Pada penelitian ini dilakukan pengamatan fisik berupa analisis warna, *baking loss* dan *spread ratio*, serta pengamatan kimia seperti kadar protein total dan kadar air. Sedangkan pada variabel sensori diamati warna, aroma, tekstur, rasa dan tingkat kesukaan. Sampel perlakuan terbaik yang diuji menggunakan indeks efektivitas kemudian dibandingkan dengan *cookies* kontrol (C) pada analisis proksimat (kadar air, protein total, lemak, abu dan karbohidrat), serat (serat tak larut dan terlarut) dan tekstur (*hardness*, *gumminess*, *chewiness*, *adhesiveness* dan *cohesiveness*) serta dibandingkan dengan standar SNI 01-2973-2011.

Hasil penelitian menunjukkan bahwa penambahan kacang lupin dalam bentuk *puree* kacang lupin menghasilkan nilai *redness*, *yellowness*, dan kadar protein terlarut yang lebih rendah, namun memiliki kadar air yang lebih tinggi dibandingkan dengan penambahan tepung kacang lupin. Penambahan pemanis mengandung stevia yang semakin tinggi dapat menyebabkan penurunan nilai *yellowness* dan *baking loss cookies* yang dihasilkan. Perlakuan terbaik berdasarkan karakteristik fisikokimia dan sensori *cookies* didapatkan pada perlakuan yang sama yaitu dengan penambahan tepung kacang lupin dengan konsentrasi pemanis mengandung stevia 4% dengan nilai *lightness* ( $L^*$ ) cukup terang yaitu 69,42, *redness* ( $a^*$ ) relatif rendah yaitu 2,98, *yellowness* ( $c^*$ ) cukup kuat yaitu 43,21, protein terlarut 5,53%, kadar air 10,19%, *baking loss* 25,79%, *spread ratio* 6,32 %, berwarna kuning kecoklatan (4,06), aroma tidak khas kacang lupin (2,99), tekstur agak remah (3,63), rasa tidak manis (2,85) dan agak disukai panelis (3,78).

## SUMMARY

*Cookies are one of the bakery products characterized by high sugar content, where sucrose is a commonly used sweetener. In this study, stevia sweeteners including sorbitol and erythritol were used which are low in calories and glycemic index, and do not cause tooth decay as in the use of sucrose. In this study, fermented sorghum flour was also used, as it does not cause inflammatory reactions, as in the use of wheat flour. The addition of lupin beans in this study was used to increase the soluble protein content in the fermented sorghum cookies produced. The purpose of this study was to determine the effect and determine the best treatment combination of the addition of lupin beans and sweetener concentration containing stevia on the physicochemical and sensory characteristics of fermented sorghum cookies.*

*The experimental design used was a Randomized Group Design (RAK) on the basis of grouping based on the preparation of lupin bean puree with four replications. The factors studied were the addition of lupin beans (L) in the form of lupin bean puree (L1) and lupin bean flour (L2) and the sweetener concentration factor containing stevia (S) at a concentration of 4% (S1); 5% (S2); and 6% (S3). In this study, physical observations were made in the form of color analysis, baking loss and spread ratio, as well as chemical observations such as total protein content and moisture content. While the sensory variables were observed for color, aroma, texture, taste and level of liking. The best treatment sample tested using the effectiveness index was then compared with the control cookies (C) on proximate analysis (moisture content, total protein, fat, ash and carbohydrates), fiber (insoluble and soluble fiber) and texture (hardness, gumminess, chewiness, adhesiveness and cohesiveness) and compared with SNI 01-2973-2011 standards.*

*The results showed that the addition of lupin beans in the form of lupin bean puree produced lower redness, yellowness, and soluble protein values, but had a higher water content compared to the addition of lupin bean flour. The higher addition of stevia-containing sweetener can cause a decrease in the yellowness and baking loss values of the cookies produced. The best treatment based on the physicochemical and sensory characteristics of cookies is obtained in the same treatment, namely the addition of lupin nut flour with a sweetener concentration containing 4% stevia with a fairly bright lightness ( $L^*$ ) value of 69.42, redness ( $a^*$ ) is relatively low at 2, 98, yellowness ( $c^*$ ) is quite strong at 43.21, soluble protein is 5.53%, moisture content is 10.19%, baking loss is 25.79%, spread ratio is 6.32%, brownish yellow in color (4.06), aroma is not typical of lupin beans (2.99), texture is slightly crumbly (3.63), taste is not sweet (2.85) and somewhat liked by panelists (3.78).*