ABSTRAK

Yoghurt susu kambing memiliki potensi gizi yang tinggi, namun aromanya kurang disukai oleh sebagian konsumen. Penambahan ekstrak jahe merah (*Zingiber officinale* var. *Rubrum*) dilakukan untuk meningkatkan kualitas yoghurt dari aspek tekstur dan sensori. Penelitian ini bertujuan mengkaji pengaruh penambahan ekstrak jahe merah dengan konsentrasi 2%, 4%, dan 6% terhadap tekstur (*firmness* dan work of penetration) dan karakteristik sensori (warna, aroma, tekstur, rasa, dan tingkat kesukaan keseluruhan) yoghurt susu kambing, serta mengetahui adanya perbedaan kualitas yoghurt susu kambing dengan berbagai konsentrasi jahe merah.

Penelitian ini menggunakan Rancangan Acak Lengkap (RAL) dengan empat taraf perlakuan (P0: kontrol tanpa ekstrak jahe merah; P1: 2%; P2: 4%; P3: 6% ekstrak jahe merah dari volume susu kambing) dan lima kali ulangan. Ekstrak jahe merah dibuat dengan dicuci, dikupas, dihaluskan, disaring, dan dipanaskan pada suhu 80°C selama 15 menit. Yoghurt dibuat dengan memanaskan susu kambing hingga 80°C selama 15 menit, penambahan ekstrak jahe merah sesuai perlakuan, pendinginan hingga 40°C, inokulasi starter yoghurt, dan inkubasi pada 40°C selama 6 jam. Tekstur diukur menggunakan Food Texture Analyzer untuk parameter *firmness* dan work of penetration. Karakteristik sensori dinilai oleh 25 panelis semi-terlatih menggunakan uji hedonik dengan skala 1-7 untuk warna, aroma, tekstur, rasa, dan tingkat kesukaan keseluruhan. Data dianalisis menggunakan analisis variansi (ANAVA) dan dilanjutkan dengan uji Beda Nyata Terkecil (BNT) apabila ditemukan pengaruh signifikan.

Hasil penelitian menunjukkan penambahan ekstrak jahe merah berpengaruh tidak nyata terhadap parameter tekstur obyektif (*firmness* dan work of penetration), dengan nilai berkisar 7,66-7,87 g dan 50,72-54,23 g.s. secara berturut-turut. Demikian pula, karakteristik sensori warna, aroma, dan tekstur sensori yoghurt juga menunjukkan pengaruh tidak nyata, dengan skor kesukaan masing-masing berkisar 9,97-10,68 (warna), 8,90-9,75 (aroma), dan 7,92-10,06 (tekstur). Pengaruh tidak nyata ini diduga karena pemanasan ekstrak jahe merah pada 80°C selama 15 menit menonaktifkan enzim protease yang berperan dalam pembentukan gel, serta mendegradasi komponen aromatik dan pigmen. Perubahan tekstur yang relatif halus dan homogenitas produk akibat proses produksi yang seragam juga berkontribusi pada sulitnya panelis mendeteksi perbedaan signifikan. Penambahan ekstrak jahe merah berpengaruh nyata terhadap karakteristik sensori rasa yoghurt susu kambing, dengan skor kesukaan berkisar 5,34-8,61. Semakin tinggi konsentrasi ekstrak jahe merah, tingkat kesukaan panelis terhadap rasa yoghurt cenderung menurun, disebabkan oleh senyawa gingerol, shogaol, dan zingeron dalam jahe merah yang memberikan rasa pedas, panas, dan pahit. Yoghurt tanpa penambahan ekstrak jahe merah berbeda nyata rasanya dengan yoghurt yang ditambahkan ekstrak jahe merah 2%, 4%, dan 6%. Secara keseluruhan, penambahan ekstrak jahe merah berpengaruh tidak nyata terhadap tingkat kesukaan keseluruhan (overall) yoghurt, dengan nilai rata-rata skor berada pada kisaran 6,92-8,91, menunjukkan produk tetap dapat diterima dengan baik oleh panelis.

Penambahan ekstrak jahe merah dengan konsentrasi yang semakin tinggi cenderung memberikan pengaruh tidak nyata terhadap tekstur yoghurt (baik secara obyektif maupun sensori), warna, aroma, dan tingkat kesukaan keseluruhan. Penambahan ekstrak jahe merah berpengaruh nyata terhadap rasa yoghurt susu kambing, di mana konsentrasi yang

lebih tinggi cenderung menurunkan tingkat kesukaan rasa akibat adanya senyawa pedas dan pahit dari jahe.

Disarankan agar ekstrak jahe merah tidak dipanaskan sebelum ditambahkan ke dalam susu agar enzim protease dan senyawa aktif lainnya tetap stabil dan dapat memengaruhi tekstur yoghurt. Penyesuaian konsentrasi ekstrak jahe merah yang lebih tepat juga perlu dilakukan untuk menghindari koagulasi berlebih dan menjaga mutu serta stabilitas yoghurt.

Kata Kunci: ekstrak jahe merah, karakteristik sensori, susu kambing, tekstur, yoghurt

ABSTRACT

Goat milk yogurt has high nutritional potential, but its distinctive aroma is often less acceptable to consumers. The addition of red ginger extract (*Zingiber officinale* var. *Rubrum*) is expected to improve the quality of yogurt, particularly in terms of texture and sensory attributes. This study aimed to investigate the effect of adding red ginger extract at concentrations of 2%, 4%, and 6% on the texture (*firmness* and work of penetration) and sensory characteristics (color, aroma, taste, texture, and overall liking) of goat milk yogurt, and to identify any qualitative differences in goat milk yogurt across varying red ginger concentrations.

This research employed a Completely Randomized Design (CRD) with four treatment levels (P0: control without red ginger extract; P1: 2%; P2: 4%; P3: 6% red ginger extract from the goat milk volume) and five replications. Red ginger extract was prepared by washing, peeling, mashing, filtering, and heating at 80°C for 15 minutes. Yogurt was produced by heating goat milk to 80°C for 15 minutes, adding red ginger extract according to treatment, cooling to 40°C, inoculating with yogurt starter, and incubating at 40°C for 6 hours. Texture was measured using a Food Texture Analyzer for *firmness* and work of penetration. Sensory characteristics were assessed by 25 semi-trained panelists using a hedonic test with a 1-7 scale for color, aroma, texture, taste, and overall liking. Data were analyzed using analysis of variance (ANOVA) and, if significant effects were found, followed by the Least Significant Difference (LSD) test.

The study results indicated that the addition of red ginger extract had an insignificant effect on objective texture parameters (*firmness* and work of penetration), with values ranging from 7.66-7.87 g and 50.72-54.23 g.s., respectively. Similarly, the sensory characteristics of color, aroma, and sensory texture of the yogurt also showed an insignificant effect, with average liking scores ranging from 9.97-10.68 (color), 8.90-9.75 (aroma), and 7.92-10.06 (texture). This insignificant effect is hypothesized to be due to the heating of the red ginger extract at 80°C for 15 minutes, which might have inactivated protease enzymes crucial for gel formation and degraded aromatic components and pigments. The relatively subtle textural changes and the product's homogeneity due to consistent production processes also contributed to the panelists' difficulty in detecting significant differences. The addition of red ginger extract, however, had a significant effect on the sensory characteristic of taste in goat milk yogurt, with liking scores ranging from 5.34-8.61. Higher concentrations of red ginger extract tended to decrease panelists' liking for the taste of the yogurt, attributed to the presence of gingerol, shogaol, and zingerone compounds in red ginger, which impart pungent, hot, and bitter flavors. Yogurt without red ginger extract tasted significantly different from yogurts with 2%, 4%, and 6% added red ginger extract. Overall, the addition of red ginger extract had an insignificant effect on the overall liking of the yogurt, with average scores ranging from 6.92-8.91, indicating that the product remained well-accepted by panelists.

Increasing concentrations of red ginger extract generally had an insignificant effect on the texture of yogurt (both objectively and sensorially), color, aroma, and overall liking. The addition of red ginger extract had a significant effect on the taste of goat milk yogurt, where higher concentrations tended to decrease taste liking due to the pungent and bitter compounds from the ginger.

It is recommended that red ginger extract not be heated before being added to the milk, to preserve the stability of protease enzymes and other active compounds that could influence yogurt texture. A more precise adjustment of red ginger extract concentration is also needed to prevent excessive coagulation and maintain yogurt quality and stability.

Keywords: goat milk, red ginger extract, sensory characteristics, texture, yogurt