RINGKASAN

Diabetes melitus tipe 2 merupakan penyakit kronis tidak menular yang terus meningkat secara global termasuk di Indonesia. Salah satu upaya pencegahan dan terapi yang potensial adalah melalui pola makan sehat seperti konsumsi yoghurt yang terbukti memiliki efek protektif terhadap diabetes tipe 2. Fortifikasi yoghurt dengan bahan pangan fungsional seperti spirulina, isolat protein kedelai (IPK), dan kulit buah naga merah (*Hylocereus polyrhizus*) kaya antioksidan dan senyawa bioaktif mampu menurunkan kadar glukosa. Namun, yoghurt umumnya mengandung gula tambahan yang berisiko meningkatkan kadar glukosa darah, sehingga penggunaan pemanis alami dengan indeks glikemik rendah seperti stevia dan gula kelapa dapat menjadi solusi alternatif. Penelitian ini dilakukan untuk mengevaluasi komponen bioaktif, karakteristik fisikokimia, mikrobiologi, sensori, dan efek antidiabetik variasi pemanis yoghurt susu jagung dengan bubuk kulit buah naga sebagai alternatif pangan fungsional untuk terapi diabetes tipe 2.

Penelitian dilaksanakan dalam 2 tahap penelitian. Penelitian tahap pertama menggunakan Rancangan Acak Lengkap (RAL) non faktorial dengan faktor variasi pemanis. Penelitian tahap kedua merupakan percobaan *in vivo* dengan menggunakan Rancangan Acak Kelompok (RAK) yang terdiri atas 6 kelompok perlakuan. Variabel pengukuran penelitian tahap pertama yaitu uji komponen bioaktif (inhibisi DPPH, kadar flavonoid, dan total fenol), karakteristik fisikokimia (proksimat, total energi, dan kadar gula pereduksi), mikrobiologi, dan sensori. Variabel pengukuran penelitian tahap kedua yaitu uji kadar gula darah puasa, malondialdehid (MDA), hemoglobin (Hb), dan berat badan tikus.

Hasil analisis menunjukkan variasi pemanis dan bubuk kulit buah naga (*H. polyrhizus*) pada yoghurt susu jagung berpengaruh signifikan terhadap kadar flavonoid, total fenol, kadar air, total energi, kadar gula pereduksi, intensitas warna coklat, dan kekentalan. Analisis sensori menunjukkan semua perlakuan menunjukkan tingkat kesukaan keseluruhan yang rendah. Variasi pemanis yoghurt susu jagung dengan bubuk kulit buah naga (*H. polyrhizus*) memiliki efek antidiabetik terhadap tikus diabetes tipe 2. Yoghurt BP2 dan BP3 dapat menurunkan kadar gula darah puasa dan malondialdehid (MDA) serta meningkatkan kadar hemoglobin (Hb) dan berat badan yang sebanding dengan metformin dan lebih baik dibandingkan yoghurt komersial.

Kata kunci: efek antidiabetik, yoghurt susu jagung, bubuk kulit buah naga, variasi pemanis

SUMMARY

Type 2 diabetes mellitus is a chronic non-communicable disease that continues to increase globally, including in Indonesia. One potential preventive and therapeutic approach is through a healthy diet, such as consuming yogurt, which has been shown to have a protective effect against type 2 diabetes. Fortifying yogurt with functional food ingredients like spirulina, soy protein isolate (SPI), and red dragon fruit peel (Hylocereus polyrhizus), which are rich in antioxidants and bioactive compounds, can help lower blood glucose levels. However, yogurt typically contains added sugar, which poses a risk of increasing blood glucose levels. Therefore, the use of natural sweeteners with a low glycemic index, such as stevia and coconut sugar, could serve as an alternative solution. This study was conducted to evaluate the bioactive components, physicochemical characteristics, microbiology, sensory properties, and antidiabetic effects of corn milk yogurt with added variations of sweeteners and dragon fruit peel powder as an alternative functional food for type 2 diabetes therapy.

The study was conducted in two stages. The first stage used a non-factorial completely randomized design (CRD) with sweetener variation as the factor. The second stage was an in vivo experiment using a randomized block design (RBD) consisting of six treatment groups. The measurement variables in the first phase of the study were bioactive component tests (DPPH inhibition, flavonoid content, and total phenol content), physicochemical characteristics (proximate analysis, total energy, and reducing sugar content), microbiology, and sensory evaluation. The measurement variables in the second phase of the study were fasting blood sugar levels, malondialdehyde (MDA), hemoglobin (Hb), and body weight of the rats.

The results of the analysis showed that the variation in sweeteners and dragon fruit peel powder (H. polyrhizus) in corn milk yogurt had a significant effect on flavonoid content, total phenols, moisture content, total energy, reducing sugar content, brown color intensity, and viscosity. Sensory analysis showed that all treatments had low overall acceptability. Variations in sweetener in corn milk yogurt with dragon fruit peel powder (H. polyrhizus) have an antidiabetic effect on type 2 diabetic rats. Yogurt BP2 and BP3 can reduce fasting blood sugar levels and malondialdehyde (MDA) levels while increasing hemoglobin (Hb) levels and body weight, comparable to metformin and better than commercial yogurt.

Keywords: antidiabetic effect, corn milk yogurt, dragon fruit peel powder, sweetener variations