

RINGKASAN

Diabetes melitus menjadi suatu permasalahan yang meluas karena telah menjadi penyebab utama kecacatan dan kematian di dunia termasuk Indonesia dengan prevalensi yang terus meningkat setiap tahunnya. Diabetes melitus ditandai kadar glukosa darah yang tinggi karena adanya gangguan pada aktivitas dan fungsi insulin. Oleh karena itu, perlu mengatur pola makan yang baik dengan mengonsumsi pangan berindeks glikemik rendah, tinggi serat dan antioksidan. Pengembangan yoghurt berbasis susu kambing dengan variasi penambahan proporsi sukrosa-fruktosa, ekstrak sarang semut dan sari buah naga merah merupakan salah satu alternatif pangan fungsional tinggi serat dan antioksidan. Penelitian ini bertujuan untuk mengetahui pengaruh proporsi sukrosa dan fruktosa, pengaruh ekstrak sarang semut dan sari buah naga merah, dan pengaruh interaksi kedua faktor terhadap sifat sensori dan fisikokimia yoghurt, menentukan formulasi yoghurt terbaik didasarkan aspek penambahan ekstrak sarang semut dan sari buah naga merah pada setiap variasi proporsi sukrosa-fruktosa, serta mengetahui pengaruh pemberian yoghurt terbaik terhadap respon glukosa darah tikus.

Penelitian tahap satu dilakukan secara eksperimental dengan rancangan acak kelompok faktorial terdiri 2 faktor: 1) proporsi sukrosa-fruktosa (100:0; 50:50; 0:100) dan 2) penambahan ekstrak sarang semut dan sari buah naga merah (ESBN) (1:2) (10%, 15%, 20%). Penentuan tiga yoghurt terpilih hasil tahap satu pada analisis fisikokimia dan analisis sensori hedonik berdasarkan penambahan ESBN terbaik pada setiap variasi proporsi sukrosa-fruktosa dengan metode indeks efektivitas. Penelitian tahap dua dilakukan analisis secara *in vivo* pada 5 kelompok hewan uji pada kelompok tikus normal. Data dianalisis menggunakan ANOVA variasi kepercayaan 95% dengan uji lanjut DMRT apabila berbeda nyata.

Hasil penelitian menunjukkan proporsi sukrosa dan fruktosa, ekstrak sarang semut dan sari buah naga merah (ESBN), dan interaksi kedua faktor berpengaruh nyata terhadap sifat sensori dan fisikokimia yoghurt. Hasil uji indeks efektivitas tahap satu menunjukkan bahwa yoghurt P1K2 (sukrosa 100% + ESBN 15%), yoghurt P2K2 (sukrosa 50% : fruktosa 50% + ESBN 15%), dan yoghurt P3K2 (fruktosa 100% + ESBN 15%) adalah hasil terbaik dari aspek sensori dan fisikokimia. Hasil penelitian tahap dua menunjukkan respon glukosa darah menit ke 120 pada yoghurt P1K2 (sukrosa 100% + ESBN 15%), yoghurt P2K2 (sukrosa 50% : fruktosa 50% + ESBN 15%), dan yoghurt P3K2 (fruktosa 100% + ESBN 15%), berturut-turut 74,75 mg/dL; 77,24 mg/dL; 74,74 mg/dL; lebih rendah dibandingkan respon glukosa darah pada yoghurt komersial yaitu 93,66 mg/dL.

SUMMARY

Diabetes mellitus is a widespread problem because it has become the main cause of disability and death in the world, including Indonesia, with a prevalence that continues to increase every year. Diabetes mellitus is characterized by high blood glucose levels due to disturbances in insulin activity and function. Therefore, it is necessary to regulate a good diet by consuming foods with a low glycemic index, high in fiber and antioxidants. Development of goat's milk-based yoghurt with variations in the proportion of sucrose-fructose, ant nest extract and red dragon fruit juice is an alternative functional food high in fiber and antioxidants. This study aims to determine the effect of the proportion of sucrose and fructose, the effect of ant nest extract and red dragon fruit juice, and the effect of the interaction of the two factors on the sensory and physicochemical properties of yoghurt, determining the best yoghurt formulation based on the aspect of adding concentrations of ant nest extract and red dragon fruit juice to each variation in the proportion of sucrose-fructose, as well as knowing the effect of giving yoghurt on the blood glucose response of rats.

The first phase of this research was carried out experimentally with a block randomized factorial design consisting of 2 factors: 1) proportion of sucrose-fructose (100:0; 50:50; 0:100) and 2) concentration of ant nest extract and red dragon fruit juice (ESBN) (1:2) (10%, 15%, and 20%). The determination of the three selected yoghurts was the result of stage one of the physicochemical analysis and hedonic sensory analysis based on the best concentration of ant nest extract and red dragon fruit juice (ESBN) at each sucrose-fructose proportion level using the effectiveness index method. The second phase of the research carried out in vivo analysis on 5 groups of test animals, namely the group of normal mice. Data were analyzed using ANOVA with a 95% confidence level with a DMRT further test if they were significantly different.

The results showed that the proportion of sucrose and fructose, ant nest extract and red dragon fruit juice (ESBN), and the interaction of the two factors had a significant effect on the sensory and physicochemical properties of yoghurt. The results of the first stage effectiveness index test showed that P1K2 yoghurt (100% sucrose + 15% ESN), P2K2 yoghurt (50% sucrose : 50% fructose + 15% ESN), and P3K2 yoghurt (100% fructose + 15% ESN) were the results. best from sensory and physicochemical aspects. The results of the second phase of the study showed a blood glucose response at 120 minutes in P1K2 yoghurt (100% sucrose + 15% ESN), P2K2 yoghurt (50% sucrose : 50% fructose + 15% ESN), and P3K2 yoghurt (100% fructose + 15% ESN %), respectively 74.75 mg/dL; 77.24 mg/dL; 74.74 mg/dL; lower than the blood glucose response to commercial yoghurt, namely 93.66 mg/dL.