KARAKTERISTIK FISIKOKIMIA DAN POTENSI ANTIDIABETES SECARA *IN VITRO* BERAS ANALOG TINGGI ANTIOKSIDAN BERBASIS UMBI UWI *(Dioscorea alata)* DAN LABU KUNING *(Cucurbita maxima)*

ABSTRAK

Penyakit diabetes melitus tipe 2 (DMT2) merupakan salah satu penyakit yang ditandai dengan meningkatnya kadar gula darah melampaui nilai normal. Penyakit ini menjadi permasalahan global karena tingkat prevalensi atau penderitanya semakin tinggi termasuk di Indonesia. Penderita DMT2 dianjurkan untuk menghindari mengonsumsi makanan pemicu kenaikan gula darah. Sedangkan masyarakat Indonesia sehari-hari masih bergantung pada nasi dari beras padi yang memiliki indeks glikemik tinggi yang dapat meningkatkan kadar gula darah sehingga semakin meningkat risiko penyakit DMT2. Sebagai alternatif dalam menggantikan beras yang aman dikonsumsi bagi penderita DMT2 yaitu dengan mengonsumsi beras analog. Beras analog merupakan beras tiruan yang menggunakan bahan baku berupa biji-bijian atau umbi-umbian. Pada penelitian ini menggunakan Umbi uwi *(Dioscorea alata)* yang dikombinasikan dengan labu kuning (*Cucurbita maxima*) dalam pembuatan beras analog tinggi antioksidan. Umbi uwi dan labu kuning dipilih karena bahan tersebut memiliki kandungan gizi yang beragam dan keberadaannya tergolong cukup melimpah namun pemanfaatannya masih kurang luas. Hasil penelitian menunjukkan semakin meningkat konsentrasi labu kuning akan meningkatkan sifat fisik seperti daya ikat air dan nilai b yaitu warna kuning yang tampak pada beras analog. Sifat kimia seperti kadar air, abu dan protein semakin meningkat namun kadar pati, karbohidrat, amilosa, amilopektin yang menurun. Selain itu juga semakin meningkatnya nilai total fenolik, antioksidan DPPH dan ABTS, persentase penghambatan aktivitas enzim α-amilase dan uji sensoris deskriptif meliputi warna, aroma, tekstur dan rasa. Pada penentuan formula terbaik menunjukkan bahwa formula P1 yaitu 85% umbi uwi dan 15% labu kuning merupakan formula terbaik dengan kadar protein 7,97%, kadar lemak 11,86%, karbohidrat 75,91%, pati 76,38%, amilosa 14,77%, amilopektin 61,61%, total fenolik 0,46 mg GAE/g, %inhibisi sebesar 42% dan aktivitas antioksidan DPPH sebesar 82,39% ABTS 86,47% serta nilai uji kesukaan sebesar 4 yaitu netral sehingga berpotensi dapat diterima oleh panelis dengan baik.

Kata kunci: Antioksidan, beras analog, labu kuning, umbi uwi.

PHYSICOCHEMICAL CHARACTERISTICS AND ANTIDIABETIC POTENTIAL IN VITRO OF HIGH ANTIOXIDANTS ANALOGUE RICE BASED ON GREATER YAM (Dioscorea alata) AND YELLOW PUMPKIN (Cucurbita maxima)

ABSTRACT

Type 2 diabetes mellitus (T2DM) is one of the diseases characterized by increased blood sugar levels beyond normal values. This disease is a global problem because the prevalence rate is getting higher, including in Indonesia. People with T2DM are recommended to avoid eating foods that trigger an increase in blood sugar. While the daily consumption of Indonesian people still depends on rice, which has a high glycemic index and can increase blood sugar levels, the risk of T2DM disease increases. An alternative to replacing rice that is safe for consumption for people with T2DM is making analogue rice. Analogue rice is artificial rice that uses raw materials, which can be grains or tubers. In this study, we used greater yam (Dioscorea alata) combined with yellow pumpkin (Cucurbita maxima) to make high antioxidant analogue rice. Greater yam and yellow pumpkin were chosen because these ingredients have diverse nutritional content and their existence is quite abundant but their use is still not widespread. The results showed that increasing the concentration of yellow pumpkin will increase physical properties such as water holding capacity and b value, which is the yellow color that appears in analogue rice. Chemical properties such as water content, ash and protein are increasing but starch, carbohydrates, amylose, amylopectin levels are decreasing. In addition, the increasing value of total phenolics, DPPH and ABTS antioxidants, the percentage of inhibition of α-amylase enzymes and descriptive sensory tests including color, aroma, texture and taste. The determination of the best formula shows that the P1 treatment, which is 85% greater yam and 15% yellow pumpkin, is the best formula with a protein content of 7.97%, fat content of 11.86%, carbohydrates 75.91%, starch 76.38%, amylose 14.77%, amylopectin 61.61%, total phenolic 0.46 mg GAE/ g, %inhibition of 42% and DPPH antioxidant activity of 82.39%, ABTS 86.47% and a favorability test value of 4, which is neutral so that it has the potential to be well received by the panelists.

Keywords: Analogue rice, antioxidant, greater yam, pumpkin