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Research Article

Combination of Bawang Dayak Extract and Acarbose against Male White Rat Glucose Levels

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Abstract

Diabetes is a chronic metabolic disease with signs of increased blood glucose levels. Type 2 diabetes is common diabetes in adults. Bawang dayak is one of the plants believed to have the efficacy of curing various types of diseases. The purpose of this study was to find out the comparison of hypoglycemic effects between combinations of bawang dayak extract and acarbose with single acarbose. This study was an experimental study using 32 white mice divided into two groups. Group one was given a combination of bawang dayak at a dose of 100 mg/kg BW and acarbose at a dose of 40 mg/100 g BW, while group two was given acarbose at a dose of 40 mg/100 g BW. Treatment is administered after the test animal is induced with dexamethasone at a 1 mg/kg BW dose dissolved in NaCl 0.9% subcutaneously for 12 days. Measurement of glucose levels was carried out using a glucometer. Data retrieval was carried out every three days for 15 days after previously fulfilled for +10 hours. Blood glucose level data were analyzed with the General Linear Model test. The combination of bawang dayak-acarbose onion extract had a greater decrease in blood glucose levels than single acarbose. Average reduction in blood glucose levels for D+3; D+6; D+9; D+12; and D+15 was 187.31; 168.56; 140.81; 119.81; and 102.56 mg/dl, respectively. The General Linear Model test results showed a $p < 0.05$ value that significantly impacted blood glucose levels between groups.

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INTRODUCTION

Diabetes (or diabetes mellitus; DM) is a chronic metabolic disease characterized by increased blood glucose levels[1]. These conditions are associated with carbohydrate, fat, and protein metabolism disorders due to insulin and severe conditions of microvascular, macrovascular, and chronic neuropathy[2]. Approximately 476 million people worldwide have DM, mostly in poor and developing countries[3]. The prevalence of DM in Indonesia is 6.2%, and Indonesia is among the ten countries with 10 million living with DM[4].

The American Diabetes Association classifies DM into 4; DM type 1, type 2, gestational DM, and certain types of DM due to other causes such as monogenic diabetes syndrome, exocrine pancreatic disease, and DM trigger drugs[1,5]. In the last three decades, the prevalence of type 2 diabetes (T2DM) has increased dramatically. Affordability of access to treatment, including insulin, is essential for the survival of people with DM[6,7]. However, therapy for T2DM uses more antihyperglycemic drugs rather than insulin, such as biguanides, sulfonylureas, meglitinides, thiazolidinedione (TZD), dipeptidyl peptidase 4 (DPP-4) inhibitors, sodium-glucose