

Comparative study on the effectiveness of pineapple skin and one-time-squeezed desiccated coconut on glucose-induced Wistar rats

Adelia Grisanti ¹, Bryanna Kate Lynne Simbolon ², Felix Cornelius Goenawan ³, Heidi Tjokro Saputro ⁴, Nalina Lunardhi ⁵

- 1.) Adelia Grisanti (312220961@xinzhong.sch.id)
- 2.) Bryanna Kate Lynne Simbolon (312220972@xinzhong.sch.id)
- 3.) Felix Cornelius Goenawan (312221002@xinzhong.sch.id)
- 4.) Heidi Tjokro Saputro (312221085@xinzhong.sch.id)
- 5.) Nalina Lunardhi (312221048@xinzhong.sch.id)

Abstract

Fruit waste-products are produced regularly in huge amounts in almost every part of the world. Since it is known that adequate intake of fruits has been linked to a reduced risk of chronic diseases such as type-2 diabetes. Given the growing number of people with diabetes, different methods of alleviating it like employing fruit by-products is worth exploring. This study investigated the presence of phytochemical contents of two waste-products that came from pineapple and coconut such as peels and desiccated kernels (after one-time squeezed) respectively. This was done by open Sun-drying separately both fruit waste-products for 2 days, and then extracting them using 10 ml of water as a solvent at 90 °C for 2 hours. Phytochemical screening revealed the presence of bioactive compounds such as alkaloids, saponins and flavonoids. The researchers also employed the use of 30 Wistar rats that were divided into 5 groups such as: control, PP1- pineapple peel 50%, PP2- pineapple peel 75%, DC1- desiccated coconut 50% and DC2- desiccated coconut 75% in order to compare the effectiveness of both fruit waste-products in the fasting blood sugar level of glucose-induced rats. The results showed the significant difference of the rats' blood glucose levels in all treatment groups after 3 days of treatment. The results were expressed by F-value which $F(4, 25) = 6.307$, $P = .001$. In addition, it also revealed that the one treated with 50% pineapple peel extract has the lowest fasting blood glucose level after the treatment (68.00 mg/dl) followed by 75% pineapple peel extract (71.50 mg/dl), 75% desiccated coconut (89.50 mg/dl), 50% desiccated coconut (97.50 mg/dl) and control group (156mg/dl).

1. Introduction

Alarmingly, the International Diabetes Federation (IDF) noted that 537 million adults or simply 1 in 10 people live with diabetes worldwide. This leads to 6.7 million deaths or 1 death every 5 seconds. Furthermore, IDF also declared that Indonesia ranked 5th for having a total of 19.47 million people suffering from diabetes across the

country. [1] Also, Diabetes Mellitus (DM) is now 70 times higher among children in Indonesia for the last 13 years. The Indonesian Paediatrician Association (IDAI) stated that the number of DM cases in children has reached 1,645 this year.

Diabetes Mellitus (DM) happens when your blood glucose, is too high. This occurs when the pancreas in your body doesn't make enough insulin, which is the case for type-1 Diabetes. On the