RED DRAGON FRUIT JUICE IN REDUCING BLOOD SUGAR LEVEL IN RATS WITH TYPE 2 DIABETES MELITUS

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ABSTRACT

Background: Previous studies reported that red dragon fruit is a rich source of anti-oxidant, polyphenolic, and flavonoid. These components can attenuate serum fibroblast growth factor-21 (FGF-21) resistance, improve insulin resistance, reduce oxidative stress, and preserve pancreatic beta-cell function, which is related to blood sugar level. This study aimed to examine red dragon fruit juice in reducing blood sugar level in rats with type 2 diabetes mellitus (DM).

Subjects and Method: This was a randomized controlled trial. 28 male wistar rats (*Rattus norvegicus*) was selected for this study and randomly allocated into four groups: (1) Positive control group, (2) Negative control group (induced with Streptozotocin and Nicotinamide), (3) Metformin group (induced with Streptozotocin, Nicotinamide, and Metformin HCl 0.9 mg/kgBW), and (4) Red dragon fruit group (induced with Streptozotocin, Nicotinamide, and Red dragon fruit juice 3.6 ml/200 gBW/day). The dependent variable was blood glucose level. The independent variable was anti-diabetic agent, either Metformin or Red dragon juice, provided for 14 days. The data were analyzed by One Way Anova and post-hoc test.

Results: Before intervention, the mean blood glucose levels were comparable among the four study groups, and they were statistically non-significant indicating the randomization had achieved its intended objective. After intervention, the mean blood glucose levels were as follows: positive control group (Mean= 64.58; SD= 1.65), negative control group (Mean= 276.54; SD= 7.50), Metformin group (Mean= 120.27; SD= 7.48), and Red dragon fruit group (Mean= 114.58; SD= 8.19). Both Metformin group and Red dragon fruit group had lower blood glucose level than negative control group, and their pair-wise mean differences were statistically significant ($p < 0.001$). The mean difference in blood glucose level between the Metformin group and Red dragon fruit group was statistically non-significant ($p = 0.714$).

Conclusion: Red dragon fruit and Metformin when administered alone is effective to lower blood glucose level in rats with type 2 DM. Red dragon fruit can be used as an alternative to Metformin as their effectiveness in lowering blood glucose level are comparable.

Keywords: Red dragon fruit, Metformin, blood glucose level, type 2 diabetes mellitus

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