

The Role of Nutrition and Cannabis in Diabetes Management

Chair: *Cliff Riley*

Glycaemic Index as a Tool in Developing Functional Foods: Impact on Hyperglycaemia and Satiety

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Background: Due to the prevalence of diabetes in Jamaica, an understanding of the glycaemic index (GI) values of beverages and food can aid dietitians in guiding consumers to choose sensibly. It is reported that consumption of low GI foods may reduce the risk of Type 2 diabetes mellitus, coronary heart disease and obesity. However, low GIs snacks/foods available to diabetic patients in Jamaica are very limited. This study was conducted to develop a low GI vegetable drink, determine the GI value and make it commercially available.

Methods: Ten healthy Jamaican subjects (five males and five females) with mean age 30 ± 2 years and mean body mass index (BMI) 25 ± 1 kg/m² were recruited to the study. Using a non-blind, crossover design trial, the subjects consumed equi-carbohydrate amounts (25 g of total available carbohydrate) of the vegetable (cucumber and carrot) drink and twice glucose as reference food (25 g of total carbohydrate). Blood glucose was determined after overnight fasting (0 hours) and at 15, 30, 45, 60, 90 and 120 minutes after the consumption of each test food. The GI value was calculated geometrically by expressing the incremental area under the blood glucose curve (IAUC) as a percentage of each subject's average IAUC for the standard food.

Results: The GI value of the vegetable drink was found to be 34 ± 10 . As per the Food and Agriculture Organization, GI cut-off values are as follows: low < 55 ; medium 56–69 inclusive, high > 70 . Hence, the vegetable drink could be classified under low glycaemic food/nutrient.

Conclusion: Considering the prevalence of diabetes in Jamaica, diabetics who prefer to use low glycaemic foods that offer many beneficial health effects can consume this low GI drink. Identification of drinks and other foods with low glycaemic responses will have practical applications, because such information will be useful for dietitians and diabetics. The complex carbohydrates in carrot and cucumber may be responsible for the low postprandial glycaemic response and satiety. This will lead to a low demand for insulin secretion from the pancreatic β cells, which are impaired in Type 2 diabetic individuals. Consumption of

low GI beverages and snacks may aid in better management or prevention of chronic diseases such as Type 2 diabetes mellitus and obesity.

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Making Cannabidiol an Effective Type 2 Diabetes Therapeutic

Mark J Rosenfeld

Inflammation figures prominently in Type 2 diabetes mellitus (T2DM) pathogenesis (*eg* altered cytokine levels, leukocyte proliferation, increased tissue fibrosis). This indicates that anti-inflammatory agents could be valuable for boosting insulin sensitivity, lowering blood glucose and lipid levels, ameliorating T2DM-associated cardiovascular dysfunction and improving other complications. Meanwhile, there are drawbacks with insulin, especially for obese patients. Its use can cause weight gain, hyperinsulinaemia and increased insulin resistance. Effective alternatives to insulin injection thus become more so desirable.

Cannabidiol (CBD), a molecule exclusive to hemp and marijuana, is proving a potent anti-inflammatory with the real potential to successfully treat (and maybe prevent) T2DM (along with other inflammatory or autoimmune diseases) and thus complement or even replace insulin.

However, CBD's inherently low bioavailability when taken by mouth (5–6%) limits its usefulness as a pharmaceutical. Such inefficiency makes for erratic, unpredictable therapeutic outcomes with lesser doses. Excessive, costly amounts of CBD must instead be used for treatment success, thus making it unaffordable for most while also placing a possibly damaging load on the liver's filtration system. It becomes essential to consistently deliver a higher proportion from a lower overall and affordable dose to make CBD a meaningful T2DM therapeutic.

Combining CBD with a patented nanotechnology employing substances deemed "generally recognized as safe (GRAS)" by the US Food and Drug Administration (USFDA) makes it fully water soluble and highly bioavailable, both for the first time. Such CBD is proving much

more potent than native CBD, but still affordable, and sets the stage for making CBD a widely-used oral T2DM therapy.