

Evaluation of Glycemic Index of a Product of *Saccharum officinarum*

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The fasting blood glucose level of a healthy individual should be less than 100 mg/dl. The condition where the fasting blood glucose level rises above 126 mg/dl is known as diabetes. Diabetes can cause failure and dysfunction of several organs such as eyes, heart, kidney, blood vessels etc. Therefore, as the maintenance of blood glucose level of diabetes patients is important, they are advised to avoid sugar products with high GI which is a major factor that is associated with diabetes. Glycemic index commonly known as GI factor is a measure of power of food to raise blood glucose level after a meal. There is an increasing trend of researches on finding GI factor of commonly consumed food as this can be used to manage weight and the risk of metabolic diseases such as Diabetes. Foods with low GI are highly recommended for healthy eating. Use of the products of *Saccharum officinarum* (sugar cane) is common in Sri Lanka as a sweetener and as a medicine. Therefore, considering the high consumption of sugar cane products and some potential health benefits, this research was aimed to determine the GI of a product of *Saccharum officinarum* (Refined and unrefined Jaggery).

The study protocol was reviewed and approved by the ethics committees (BCAS REC & LSEC of UoW) of the affiliated institutes prior to implementation of the protocol. The patients consent was taken before commencing the practical. To determine the GI, apparently healthy individuals (n= 20, Age 20-30, BMI $21.5 \pm 3 \text{ kgm}^{-2}$) were selected and were given 20 g of glucose as the reference food on the first three visits and 20 g of each test food was given for 10 subjects selected randomly for another two visits. Capillary blood glucose levels were measured in every 20 minutes after commencement of consumption of the food. Glycemic index value for each test food was calculated by following the glycemic index formula recommended by World Health Organization. The IUAC for glucose, refined and unrefined jaggery were calculated using GraphPad prism 7 software.



Figure 1: Glycemic Index Values of test foods

$$\text{Glycemic Index} = \frac{\text{Incremental Area Under Curve (IAUC) of Test Food} \times 100}{\text{Incremental Area Under Curve (IAUC) of Reference Food}}$$

The results illustrate that the GI factor of refined and unrefined Jaggery are 26.3 and 25.7 respectively; hence can be categorized under food with low GI. The GI of unrefined jaggery is lower than refined jaggery and but according to the Mann-Whitney U statistical analysis there is no significant difference of glycemic index between refined jaggery and unrefined jaggery ($p < 0.05$).

Though the results indicate that the refined and unrefined jaggery of *Saccharum officinarum* can be recommended for healthy eating, research using a large sample need to be carried out before come to a final conclusion.

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