Profiling of the Glycaemic Index of Underutilised Fruit and Vegetable

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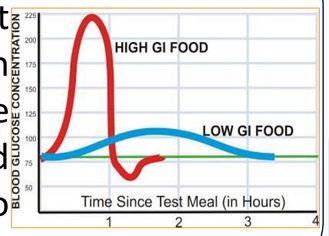
Introduction

Glycaemic Index (GI) is a term to describe the effect on blood glucose of consuming a carbohydrate rich meal. It is measured by AUC of 2hours glucose response. There is evidence that some underutilised species have a low GI value and may be used to control T2DM.



Aims

1. To review existing evidence of the role of selected underutilised species in control T2DM
2. To determine the effect of underutilised species on the GI value of rice-based diet
3. To create GI profile of selected underutilised species

Literature Review

- Bitter gourd (*Momordica charantia*) contains charantin, momordicin, cucurbutanoids, which are responsible for the hypoglycaemic principle. Bitter gourd extracts have shown anti-hyperglycaemic effects in streptozotocin-induced diabetes rats (STZ) due to the inhibition of glucose-6-photphatase as well as stimulation the activity of hepatic glucose-6-phosphate dehydrogenase[1].
- An aqueous extract of raw ginger (*Zingiber officinale*) had a significantly effect on lowering serum glucose, hypolypidemic potential of STZ-induced diabetic rats compare to control group after 7 weeks treatment[2].
- The effect of fenugreek (*Trigonellafoenum-graecum*) has been found to have a significant impact on weight loss in diabetic rats after two weeks of treatment. From that, the serum glucose, cholesterol profile was reduced, whereas insulin level was inclined only in diabetes rats, ($p<.05$)[3].

Materials and Methodology

In Vitro determination of GI value of selected species

1g available CHO
184U α-amylase
→ Vortex mix →
100U pepsin in Sodium Potassium Phosphate Buffer

pH=1.5 → Vortex mix in 30min

110U pancreatic amylase in Sodium Potassium Phosphate Buffer

pH=6.9 → Shaking water bath 37^0

Take 2ml aliquot in every 30min (0, 30, 60, 90, 120, 180)

Centrifuge 5min, 15,600 rpm
Collect supernatant

Add DNS reagent
Measure the absorbance at 540nm
Determine the reducing sugar

References

1.Lawrence Lawrence L., Richard B., Jyoti K., Susan H., Sharon C.(2009), Anti-diabetic and hypoglycaemic effects of *Momordica Charantia* (bitter melon): a mini review. Vol 102:1703-1708

2.Amin A.Z.M., Thomson M.,Peltonen S.R., Ali M., Anti-diabetic and hypolipidaemic properties of ginger (Zingiber officinale) in streptozotocin-induced diabetic rats. *British Journal of Nutriton. Vol 96:660-666.*

3.Ali L., Azad A.K., Hassan Z., Mosihuzzaman M., Nahar N., Nasreen T., Nur-e-Alam M., Rokeya B.(1995), Chracterisation of hypoglycemic effect of *Trigonella foenum graecum* seed. *Planta Med*. Vol 61:358-360