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Proximate compositions and blood glucose responses of traditional tuber varieties

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Most of tubers traditionally consumed by our ancestors have now become underutilized. Some claim that they are useful in controlling glucose responses. Thus the present study was carried out to determine the glucose responses and Glycaemic indices (GI) of some carbohydrate rich tubers traditionally consumed by Sri Lankans. The GI classifies carbohydrate rich foods depending on the blood glucose responses. Thus knowledge of GI values of foods would be important in planning diets. This study focused on determining the proximate compositions and GIs of *Buthsarana (Canna edulis) Hulankeeriya (Maranta arundinacea L)* and two varieties of *Raja ala (Dioscorea alata)* (violet & white).

The specimens were collected from the Matale, Monaragala and Kandy districts which are known to have a wide distribution of these tubers. Foods were prepared according to standardized methods. Moisture, digestible starch, fiber, fat and protein were determined by standard methods. For the determination of glycaemic index, healthy individuals (n=10) with BMI of 22 ± 2 and aged 20-30 years were initially given standard (bread) or test food containing 50 g digestible carbohydrate after an overnight fast (8-10 hrs). Before serving the glucose/test meal fasting capillary blood samples were collected. After consumption of control and test foods, blood samples were taken at 30, 45, 60, 90, 120 min on each day and GI calculated by FAO/ WHO standard methods. Digestible carbohydrate contents of the tubers were in the range of 12.5%-18% with the highest amount in *Hulankeeriya*. Protein contents were 4.5%-9% and *raja ala* violet and *Hulankeeriya* had the highest values. IDF (Insoluble Dietary fiber) and SDF (Soluble Dietary fiber) contents of the tubers were 1.3%-3.2% and 0.7%-1.6% on a wet basis respectively. Fat contents were negligible (0.2% - 0.5%). Total dietary fiber contents in *Buthsarana and Hulankeeriya* were similar (4.6%). Glycaemic indices of *Buthsarana, Hulankeeriya and Raja ala* (violet and white) were 110 ± 8, 82 ± 8, 64 ± 9, and 69 ± 4 respectively. *Hulankeeriya* and two *Raja ala* varieties had significantly low GI (P= 0.02) compared to *Buthsarana*. Two *Raja ala* varieties had the lowest GI among the foods studied. The foods with low GI had higher protein contents. The lower GI in *Raja ala* varieties could also be due to the presence of anthocyanin, encapsulated starch granules and high protein content.

Keywords: Glycaemic Index, Proximate compositions, Tubers

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