Evaluation of Functional Properties of Some Traditional and Improved Rice Varieties with Special Reference to Glycemic Index

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Abstract

Rice is the staple food of Sri Lanka and can be used effectively to increase the health status of our community. Diabetes is one of the major health issues facing Sri Lankans today. Glycemic Index can be defined as the blood glucose response of a particular food compared to a standard and, moreover, it is important for diabetic people in planning their diets. As the staple food, it is important to identify the Glycemic Index and related functional properties of available rice varieties to enhance the health status of our community.

The objective of the study was to determine the amylose content, dietary fiber content and Glycemic Index of selected rice varieties grown in Sri Lanka. Ten rice varieties, both traditional and improved, were used for the study. Amylose content and dietary fiber contents were determined using simple iodine colorimetric method and enzymatic gravimetric method, respectively, for both polished and unpolished rice samples. Proximate composition of ten rice varieties and white bread was determined and the available carbohydrate content was calculated. Glycemic response for eight unpolished rice varieties, four polished rice varieties and white bread was determined using *in-vitro* digestibility method.

Amylose content of unpolished rice varieties ranged from 29.4% (*Dik wee*) to 25.7% (*Sulai*) and in polished rice varieties ranged from 29.4% (Bg 359) to 25.9% (*Dik wee*) having the highest and the lowest values. Dietary fiber contents of unpolished varieties ranged from 4.3% (*Sulai*) to 2.5% (Bg352) and in polished varieties ranged from 3.1% (*Kalu heenati*) to 0.1% (*Kalu heenati*) having the highest and lowest values. Glycemic Index of unpolished rice varieties ranged from 108.50% (Bg 359) to 61.81% (*Sulai*) and in polished varieties ranged from 70.56% (*Sulai*) to 64 (*Rath suwadal*) having the highest and lowest values.

There was a significant difference (*P*<0.05) of amylose content among unpolished rice varieties as well as polished varieties. But, there was no significant difference (*P*>0.05) in amylose content between polished and unpolished varieties. There was a negative correlation between dietary fiber content and Glycemic Index, but there was no correlation between amylose content and Glycemic Index. Therefore, amylose content alone may not be a good predictor of Glycemic Index and there may be other factors influencing the Glycemic Index of rice. Moreover, particle size of cooked rice and polishing rate appeared to have an impact on Glycemic Index.

Keywords: Glycemic Index, glycemic response, *In-vitro* digestibility method