

## COMPARISON OF THE GLYCEMIC INDEX OF THE WHEAT FLOUR BREAD AND MALTED RICE-WHEAT BREAD AVAILABLE AT JAFFNA IN SRI LANKA

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### ABSTRACT

*The glycemic index (GI) is an important parameter of food quality which compares the hyperglycemic effect of a tested meal with pure glucose (or another defined standard food). The glycemic index of different types of breads (wheat flour bread and malted rice-wheat bread) was determined. The determination of the glycemic response and the glycemic index of these two types of breads were objectives of this study. Glucose was used as the reference food. A group of 22 with the mean age, weight, height and body mass index of volunteers were 24.62 ( $\pm 1.43$ ) years, 63.42 ( $\pm 10.50$ ) kg, 1.70 ( $\pm 0.07$ ) m and 21.90 ( $\pm 2.74$ )  $\text{kgm}^{-2}$  respectively selected for this study. The mean fasting blood glucose level of the volunteers was 84.81 ( $\pm 4.37$ )  $\text{mgdL}^{-1}$ . The mean blood glucose level at 30 and 60min after the orally administered 75g glucose were 147.43 ( $\pm 11.67$ ) and 125.95 ( $\pm 9.30$ )  $\text{mgdL}^{-1}$  respectively. The mean glycemic response of pure glucose at 30 and 60 min were 62.62 ( $\pm 11.45$ ) and 41.14 ( $\pm 8.93$ )  $\text{mgdL}^{-1}$  respectively. The higher glycemic response for the pure glucose was obtained at 30min. To the volunteers, wheat flour bread and malted rice-wheat bread containing 75g digestible carbohydrate were administered. The peak blood glucose response was obtained at 30min. The mean glycemic response of wheat flour bread, malted rice-wheat bread were 42.95 ( $\pm 2.34$ ), 38.79 ( $\pm 4.80$ )  $\text{mgdL}^{-1}$  respectively. The glycemic response obtained after the administration of 75g digestible carbohydrate containing wheat flour bread was differed significantly ( $p < 0.05$ ) from malted rice-wheat bread and glycemic index of wheat flour bread and malted rice-wheat bread was differed significantly ( $p < 0.05$ ). The mean GI values of wheat flour bread and malted rice-wheat bread were 68.59 ( $\pm 3.74$ ) and 61.95 ( $\pm 7.67$ )% respectively. Based on these GI values, it can be suggested that among the two types of breads, the malted rice-wheat bread has lower GI than wheat flour bread. Hence, the malted rice-wheat bread is a better choice for the diabetics and coronary heart disease patients.*

**Key words:** Glycemic index, Glycemic response, wheat flour bread, malted-rice bread, blood glucose level.

### EXTENDED ABSTRACT

#### AIM AND OBJECTIVE

The objective of this study was to determine the Glycemic Index (GI) of wheat flour bread and malted rice-wheat flour bread. Many research projects have been carried out in several countries (SUGiRS, 2004). In our region no studies were conducted to find the GI of locally available bakery products. The staple food, food preparation methods & nutrient composition of the diets vary from one region to another. The glycemic index measures the rate at which the carbohydrate in certain foods is digested and absorbed into the blood stream as glucose. That is, the glycemic index of the food represents its blood glucose raising potential (Beals, 2005). Thus, the evaluation of glycemic index shall help the local public to decide the dietary style particularly, the diabetic patients, coronary heart disease patients (Williams, 2004) and athletes can choose their food (glycemic index from research to nutrition recommendation, 2005). Food with a glycemic index value of 70 or more are considered to be high glycemic index diet, with an index value between 55 to 69 as medium glycemic index diet and less than 55 as low glycemic index diet (Mendosa, 2002). Hence, in this study the glycemic index of wheat flour bread and malted rice-wheat bread were tested.

#### MATERIALS AND METHODS

##### Materials

All the chemicals were purchased from standard sources (Sigma Chemical Company, USA; BDH Ltd) unless otherwise stated and the pure glucose (Royal Pure Glucose). The wheat flour bread bought from bakery. The malted rice-wheat bread was made as experimental bread.