

DETERMINATION OF GLYCEMIC INDEX VALUES OF LOCALLY AVAILABLE FOODS IN
JAFFNA AT 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 varieties of rice (*Oryza sativa*) such as White rice (Samba), Brown rice (Sivapu pachai), & Parboiled rice (Mottaikaruppan), tubers like Potato (*Solanum tuberosum*) & Cassava (*Manihot esculenta*), legumes like Green gram (*Vigna radiata*) & Chick pea (*Cicer arietinum*) and Pittu & String hopper (two traditional food) were determined. A group of 22 with the mean age, weight, height and body mass index of volunteers were 24.62 (± 1.43) years, 63.42 (± 10.50) kg, 1.70 (± 0.07) m and 21.90 (± 2.74) kgm^{-2} were respectively selected for this study. The mean fasting blood glucose level of the volunteers was 84.81 (± 4.37) mgdL^{-1} . The mean blood glucose level at 30 and 60min after the oral administration of 75g glucose were 147.43 (± 11.67) and 125.95 (± 9.30) mgdL^{-1} respectively. The mean glycemic response of pure glucose at 30 and 60 min were 62.62 (± 11.45) and 41.14 (± 8.93) mgdL^{-1} respectively and hence, higher glycemic response for the pure glucose was obtained at 30min. To the volunteers, different varieties of cooked rice (white rice, brown rice and parboiled rice), boiled potato & cassava and 'Pittu' & string hopper containing 75g digestible carbohydrate were administered, the peak blood glucose response was obtained at 30min. while for green gram and chick pea, the peak blood glucose response was obtained at 60min. The mean glycemic response of white rice, brown rice and parboiled were 41.71 (± 6.17), 37.72 (± 5.11) and 35.05 (± 3.77) mgdL^{-1} respectively and those of boiled potato and cassava were 40.80 (± 4.11) and 49.26 (± 4.57) mgdL^{-1} respectively. The mean glycemic response of 'Pittu' and string hopper were 27.39 (± 5.69) and 31.32 (± 4.42) mgdL^{-1} respectively. While, those of boiled green gram and chick pea were 19.68 (± 4.36) and 20.83 (± 3.90) mgdL^{-1} respectively. The glycemic response after the consumption cooked rice sample containing 75g digestible carbohydrate, showed significant difference ($p < 0.05$) between cooked white rice & brown rice, cooked brown rice & parboiled rice and cooked white rice & parboiled rice. While the glycemic response between boiled potato & cassava and 'Pittu' & string hopper were compared the significant difference ($p < 0.05$) was obtained. While, the analysis between boiled green gram and chick pea were non significant. The mean GI values of cooked white rice, brown rice and parboiled rice were 66.61 (± 9.86), 60.24 (± 8.16) and 55.97 (± 6.01)% respectively. While those of boiled potato, cassava, green gram and chick pea were 65.16 (± 6.56), 78.67 (± 7.30), 31.43 (± 6.96) and 33.27 (± 6.23)% respectively. The mean GI values of 'Pittu' and string hopper were 43.74 (± 9.09) and 50.01 (± 7.06)%. Based on these GI values, it can be suggested that among the three varieties of cooked rice, the parboiled rice is a better choice for lunch and 'Pittu' is a better choice for breakfast or dinner to the local public who are suffering from diabetes mellitus and coronary heart diseases. But, boiled green gram and chick pea are the better choice as they gave low glycemic response in delayed time (i.e., at 60min).

Key words: Glycemic index, Glycemic response, different varieties of rice, potato, cassava, green gram, chick pea and blood glucose level.