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## Effect of release of glucose from selected food items on their glycaemic indices

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The glycaemic index (GI) concept categorizes starchy food items according to the blood glucose response following a meal. The *in-vivo* procedure of GI determination is very laborious as it is time consuming and requires the corporation of supportive volunteers. Therefore, the aim of this study was to determine the glycaemic responses using an *in-vitro* method. The procedure used in the present study determined glucose fractions released from food items with timed incubations using digestive enzymes under standard conditions. The released glucose at different time intervals were categorized as rapidly available glucose (RAG), slowly available glucose (SAG), rapidly digestible starch (RDS) and slowly digestible starch (SDS). The fractions mentioned above were correlated to published and unpublished GI values obtained by the *in-vivo* method. The food items analysed were white sliced bread, wholmeal bread, string hopper (wheat), roti (wheat), pittu (wheat), roti (atta), red rice, string hopper (red rice), hoppers (red rice), chick pea, cowpea, mung beans and lentils. Significant positive correlations were observed between RAG contents of the 50 g available starch portions with GI ($p = 0.003$) and incremental area under curve (IAUC) ($p = 0.001$). When the RDS contents were correlated with the GI and IAUC significant positive correlations ($p =0.01$, $p=0.005$ respectively) were obtained. The SAG/RAG ratio showed a significant negative correlation with GI ($p=0.007$) and with IAUC ($p=0.001$). This *in-vitro* method not only showed a relationship between the glycaemic responses of individual items and the glucose fractions but also with the meals (wholemeal bread & lentil curry, red rice with lentil curry) containing different sources of starch. According to GI values determined by the *in-vivo* method, foods are classified as high (>85), medium (85-60) and low (<60). When classifying foods into above 3 categories using RAG this study observed that measuring RAG was more accurate in finding low (RAG<31) and high (RAG>43) GI foods. Medium GI roti preparations (dry heat processing) had high RAG values. This might be because roti preparations were chewed less thoroughly leading to a medium glycaemic response. Thus, *in-vitro* measurement of RAG and SAG can be used as a tool to predict GI values. This method can also be used to estimate the blood glucose responses of meals containing normal serving sizes which may be more or less than the 50 g available starch portion size.

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