

## ABSTRACT

### Effect of particle size of starchy staple on glycaemic index of foods

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Glycaemic index (GI) ranks starchy foods according to their potential to raise the blood glucose [low  $GI \leq 55$ , medium 56-69 or high  $\geq 70$ ]. As particle size of starchy staple could affect the GI the present study observed the effect of particle size on GI of some Sri Lankan food.

Herbal porridges, *roti* and *pittu* are typical frequently consumed foods in Sri Lanka. *Roti* and *pittu* are made with starchy flour, coconut scrapings and mixed with water and salt. Dough is made, flattened to (thickness 0.5cm) and dry cooked on a flat pan turning sides to make *roti* while flour and coconut scrapings are mixed until flaky, packed in to a bamboo column and steam cooked to make *pittu*. Two flour samples of finger millet (*Eucenea coracana*) of different particle sizes were used in *roti* and *pittu* preparation without any change in other ingredients. Tender leaves of *Scoparia dulcis*, scraped coconut kernel and red rice were extruded and dehydrated. Thus prepared extruded, milled meal was mixed with same quantity of rice powder or boiled and dried intact rice grains to make porridge 1 or 2 respectively. GIs of above foods were calculated according to the standard procedure.

A significant reduction in GI ( $p < 0.05$ ) was observed when finger millet flour with higher particle size distribution ( $\geq 0.1\text{mm}=30\%$ ,  $<0.1\text{mm}-0.05\text{mm}=35\%$ ,  $<0.05\text{mm}=35\%$ ) against flour with smaller particle size distribution ( $\geq 0.1\text{mm}=23\%$ ,  $<0.1\text{mm}-0.05\text{mm}=30\%$ ,  $<0.05\text{mm}=47\%$ ) was used in both *roti* (GI of 44 against 59) and *pittu* (GI of 67 against 79) preparations. Likewise GI of porridge 1 with smaller particle size distribution ( $\geq 0.1\text{mm}=16\%$ ,  $<0.1\text{mm}-0.05\text{mm}=64\%$ ,  $<0.05\text{mm}=20\%$ ) elicited high GI (92) whereas porridge 2 with larger particles ( $\geq 0.1\text{mm}=63\%$ ,  $<0.1\text{mm}-0.05\text{mm}=26\%$ ,  $<0.05\text{mm}=11\%$ ) elicited medium-GI (58). The data clearly indicate the particle size of flour contributes significantly to alter the glycaemic response and hence GI needs to be considered in the production of processed foods.