Nutritional composition and glycaemic response of two traditional Sri Lankan meals

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Introduction: The glycaemic index (GI) of a food indicates the effect the food has on the body's blood glucose levels. Glycaemic load (GL) gives an indication of the quantity of glucose in a food portion consumed. The present study determined the proximate composition and the glycaemic responses of 02 traditional meals namely, kurakkan thalapa meal (KTM) and kurakkan thalapa meal accompanied by kollu curry (KTMK).

Materials and Methodology: Food items were prepared according to a standard recipe. Proximate composition (moisture, ash, digestible carbohydrate, fat, protein, insoluble and soluble dietary fiber (IDF and SDF) was determined by using standard methods. The GIs were determined according to the WHO procedure with apparently healthy volunteers (n=10, age 20-30 years) served with the test foods (KTM & KTMK) and reference food (containing 25g digestible starch) on different days. GL was calculated using GI value and the digestible carbohydrate in the edible portion. Ethical approval was obtained from the 'Ethical Review Committee', University of Sri Jayewardenepura.

Results: Proximate data are indicated in Table 1. Significant decreases ($p<0.05$) were observed in IDF and carbohydrate contents in kollu curry compared to kollu flour. Kollu curry had high ash content compared to KTM. Digestible carbohydrate content of KTM was significantly higher ($p<0.05$) than the kollu curry while the fat content of kollu curry was significantly high ($p<0.05$) when compared with KTM. GI and GL of KTM and KTMK were 90 & 79 and 22 & 19 respectively.

Discussion: Decreases in IDF and carbohydrate contents in kollu curry when compared to kollu raw flour could be due to the compensatory increase in fat content due to coconut milk and oil in the curry. The high ash content in kollu curry when compared to KTM could be due to the addition of other ingredients (spices) and coconut milk in the curry preparation. Both meals were categorized as high GI foods and this could be due to the wet heating process which causes starch gelatinization. A decline in GI was observed with introduction of kollu. Portion size was noticeably influenced by the high moisture content. Portion of food used in the GI study was considered as adequate by majority of volunteers indicating satiety can be achieved by consuming a relatively lesser amount of KTM.

Conclusions: Both KTM and KTMK were categorized as high GI and high GL meals. Kollu curry has contributed to decrease the GI which could be due to the contribution of fat, protein, and slow release carbohydrates.

References:

1. Ekanayake S, 2013. Glycaemic indices (GI) and factors affecting the GI of Sri Lankan foods. SLMA Newsletter 6: 4-8.

Table 1: Proximate composition of Kurakkan thalapa and kollu curry

Nutrients in 100 g of sample	Kollu flour	Kollu curry	Kurakkan flour	Kurakkan thalapa
	Mean± SD			
***Moisture**	4.6 ±0.3[a]	8.3 ±3.3[b] (76)[#]	6.3 ±0.1[x]	7.7 ±0.1[y] (75)[#]
Ash	3.4 ±0.1[a]	8.9 ±0.1[b] (˙4.1)	1.9 ±0.4[x]	2.4 ±0.4[x] (˙0.1)
Protein	15.9 ±0.3[a]	17.1 ±0.3[a] (˙7.8)	8.2 ±0.4[x]	9.3 ±0.5[y] (˙3.8)
Fat	4.01 ±1.0[a]	25.3 ±1.3[b] (˙11)	3.8 ±1.3[x]	5.5 ±0.3[y] (˙1.8)
IDF	32.9 ±1.0[a]	9.0 ±0.2[b] (˙4.3)	15.4 ±0.5[x]	17.3 ±0.3[y] (˙7.2)
SDF	1.3 ±0.6[a]	1.4 ±0.1[a] (˙0.6)	1.3 ±0.3[x]	3.2 ±0.3[y] (˙0.6)
Carbohydrate	40.5 ±1.4[a]	34. 9 ±1.4[b] (˙16)	69. 9 ±0.8[x]	75. 5 ±0.8[y] (˙33)

***Moisture content of the flour sample; same superscript along a row indicates no significant difference (p>0.001); # = Moisture content of the fresh sample; ˙The amount present in the edible portion (50 g)**