ABSTRACT

Glucose And Insulin Responses To Different Carbohydrate-Based Foods Commonly Eaten By Patients With Type 2 Diabetes In Trinidad.

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Objectives: The objectives of the present study were (i) to identify the 3 most commonly consumed carbohydrate-based foods among type 2 diabetic patients visiting 2 primary care clinics (Arima and Chaguanas Lifestyle Disease Clinics), (ii) to determine the glucose and insulin responses to these chosen foods, (iii) to assess the differences in postprandial glucose management in the 2 clinics, and (iv) to determine which of the 3 test foods has the highest propensity to induce postprandial hypertriglyceridaemia. **Methods**: Type 2 diabetic patients were interviewed using a 24-hour food frequency recall (FFR) questionnaire during 2 seasons of the year to determine the frequently consumed foods. Information regarding all meal components eaten during breakfast, lunch and dinner of the preceding 24 hours was collected. Subsequently, 38 type 2 diabetic patients visiting 2 clinics and 27 non-diabetic subjects were studied on 3 different occasions of 7 days apart after an overnight fast. On each day of study, anthropometric indices were measured and after collecting fasting blood sample, subjects randomly consumed the predetermined test foods (bread, roti or rice) within 10 minutes of taking the blood samples. Then, 5ml of venous blood samples were collected at 60, 90, 120 and 150 minutes for insulin, glucose, total cholesterol, triglycerides, HDL- and LDL-cholesterol and HbA_{1c} determinations. **Results**: The food frequency survey showed that bread, rice and roti were the

most commonly consumed carbohydrate foods. Of these 3 foods, bread had the highest consumption frequency (38%). Expectedly, fasting and postprandial glucose concentrations for the 3 test foods were higher in diabetic patients than for the non-diabetic subjects (all; $p < 0.01$). Of all the test foods, roti elicited the highest incremental glucose responses in the diabetic patients irrespective of ethnic group or gender ($p < 0.01$). The 2.5-hour glucose levels for the diabetic patients visiting either of the 2 clinics exceeded the internationally recommended cut-off value (< 7.8 mmol/L) but was worse in patients visiting Chaguanas clinic. Incremental triglyceride after ingestion of the test foods was highest with bread and lowest with rice irrespective of diabetes status or ethnicity ($p <0.05$). **Conclusions**: There were variations in glucose and insulin responses to these test foods, however, roti elicited the highest postprandial hyperglycaemia and should therefore be discouraged in frequent dietary plan of diabetic patients. The present data suggests that commercially prepared whole-wheat brown bread eaten with cheese has the highest potential of inducing postprandial hypertriglyceridemia. However, emphasis should be placed on controlling postprandial glucose based on international standards while more aggressive diabetes dietary education should be reinforced at the clinics especially Chaguanas.

Keywords: type 2 diabetes, dietary carbohydrate, postprandial glucose, and hypertriglyceridaemia