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Predictors of hospital stay and mortality in dengue virus infection-experience from Aga Khan University Hospital Pakistan

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Postprandial Glucose Response to Mango, Banana and Sapota

Pages with reference to book, From 215 To 216

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Abstract

Objective: Mango and Sapota are two fruits indigenous to Indian subcontinent. The objective of this study was to evaluate postprandial blood glucose response to mango and sapota in comparison to banana in patients with diabetes mellitus Type 2.
Method: The plasma glucose response to mango, sapota and banana were determined in ten diabetic patients. Blood was tested at 0, 30, 60, 120 and 180 minutes following the ingestion of test meal.
Results: The results showed that the blood glucose response to these three fruits was not different in terms of area under the curve and postprandial change in blood glucose from baseline.
Conclusion: We conclude that glucose response to mango and sapota (fruits indigenous to Indian subcontinent) is no different from banana (JPMA 49:215, 1999).

Introduction

The blood glucose response to equal amounts of dietary carbohydrates varies considerably as a function of specific food ingested[1-4]. The most nutritive caloric value in fruits is carbohydrates which is in the form of sugars. There are various kinds of fruits in our region which are different from the fruit of temperate countries. Some people are used to consuming fruits instead of meals. There are not many studies in literature about the blood glucose response to mango and sapota[5].
Mango (Mangifera indica) and sapota (Mammee apple; Mammey sapota) are the fruits, much liked in Indian Subcontinent. Both are very sweet in taste and difficult for people with diabetes to refrain from. The purpose of this study was to evaluate the postprandial blood glucose response to mango and sapota in comparison to banana, a fruit widely available all over the world.

Patients and Methods

Ten diabetic patients were recruited from the outpatient clinic for the study. All the subjects were known cases of Diabetes Mellitus Type 2. Five subjects were being treated with sulfonylurea, I with biguanides, I with diet alone and 3 with insulin.
The fruits were individually portioned to provide 25 Gm of digestible carbohydrates. After an overnight fast, the patients attended the metabolic clinic in the morning. They took their regular dose of anti-diabetic medicine. On three consecutive days, each patient consumed three different test meals i.e. mango, banana and sapota. The meals were taken in 5-10 minutes with upto 150 ml of water and then capillary blood samples were collected at 0, 30, 60, 120 and 180 minutes for analysis of blood glucose by Glucometer Elite (Bayer). Twenty simultaneous blood samples were also collected in sodium fluoride tubes and analyzed by a glucose oxidase method using a Beckman glucose analyzer. The ‘r’ value for the correlation was 0.82.
The data is presented as mean ± SEM. The area under the glucose response from 0 to 3 hours was calculated geometrically. The mean change from baseline blood glucose was calculated for 30, 60, 120 and 180 minutes. Similarly mean increment in blood glucose and Cmax (maximal postprandial glucose rise) was determined for each test meal.

Statistical Analysis

Pairwise comparisons were performed for mango vs banana and sapota vs banana.

Results

The blood glucose variables that were measured in response to different test meals are shown in table.

Table. Changes in blood glucose variables.

	Mango	Banana	Sapota
Mean change in blood glucose (mg/dl) ± SEM			
At 30 min	36.7±12	35±9	42±11
60 min	33.2±5	49.5±12	43±2
120 min	3.8±10	-1.7±30	11.6±18
180 min	-19±13	-10±35	-12.3±23
Cmax (maximal postprandial glucose rise)	45.8±9	66.2±22	51.6±11
Mean blood glucose area under the curve (mg hr/dl)	3457±1094	4532±2366	4037±1528

The blood glucose response to the three fruits in terms of area under the curve and postprandial change in blood glucose from baseline did not differ significantly as is shown in the figure.

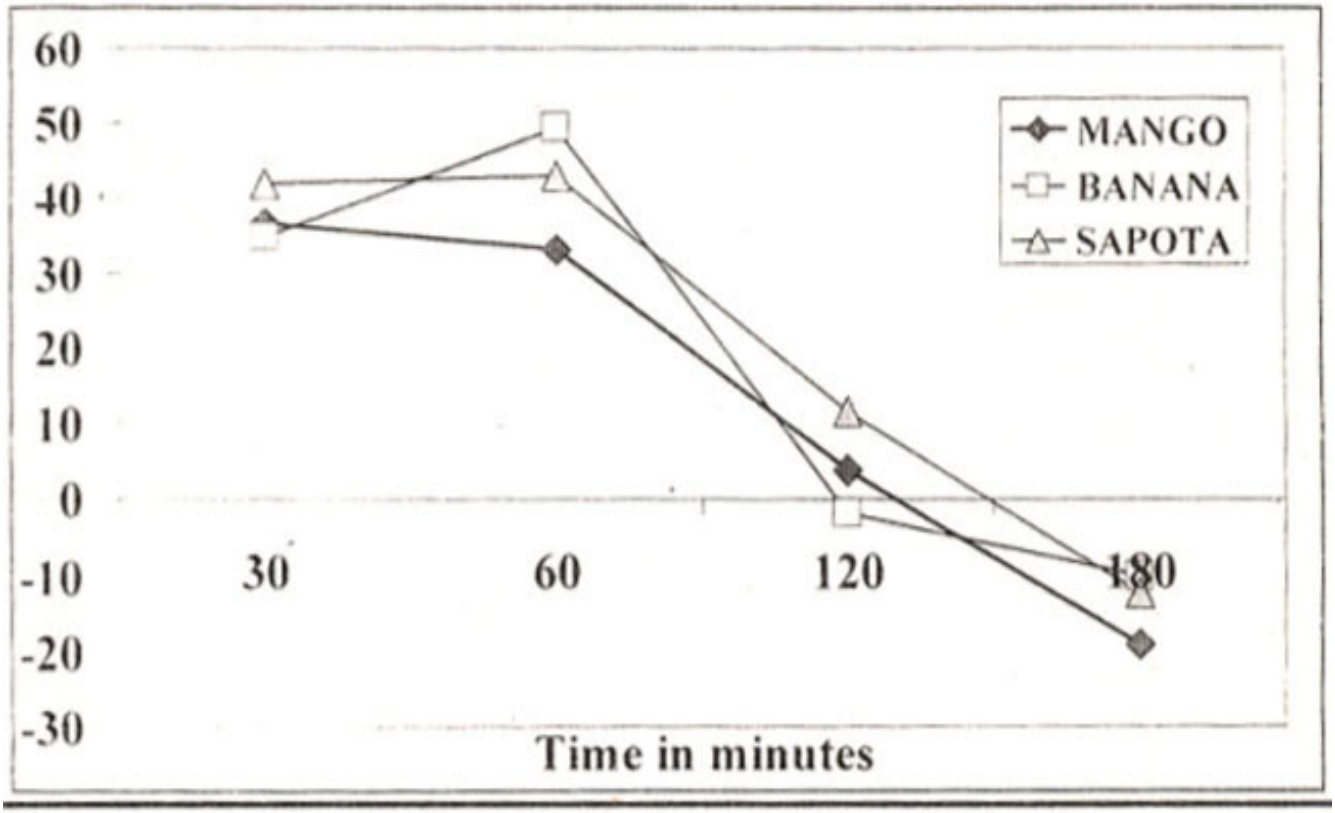

Figure. Mean change in blood glucose from baseline (mg/dl).

Banana produced the highest rise in blood glucose:
Whereas the response to mango achieved a peak at 30 min. that to banana and sapota was at 60 min.
All response curves decreased to basal levels or below at 3 hours.
The glucose level at 60 minutes was significantly higher than at 120 and 180 minutes.
The glucose area after mango and sapota was 76% and 85% of that for banana respectively.

Discussion

The results suggest that there is no significant difference in the glucose response to mango, banana and sapota, when eaten by diabetic subjects. However, contrary to general belief, the area under the glucose response curve for mango and sapota was less than that for banana. From these results one could recommend that in this region mango and sapota should be treated like other fruits and not differently. One concern always raised is over-indulgence by people with diabetes when they start eating mango. Hence they should be properly counselled and educated.

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