

Fruit-sourced carbohydrate, banana *Musa sapientum* and plantain *Musa paradisiaca* may endanger your health if you are diabetes mellitus patient

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Dear editor

It has become increasingly clear that information about endogenous enzymes rendering banana (*Musa sapientum*) and plantain (*Musa paradisiaca*) inappropriate carbohydrate sources for diabetes mellitus patients is lacking in public awareness. With teenage onset of diabetes mellitus, this warning has become even more urgent. Of the three sources of carbohydrate, (fruit, root and seed), the fruit source – banana (*Musa sapientum*) and plantain (*Musa paradisiaca*)—has been the subject of much misinformation.

Banana is one of the five-a-day fruits recommended for healthy living. Normal persons, as well as diabetes mellitus patients, follow this advice and consume ripe banana regularly. Plantain is the recommended diet by some doctors in some countries in West Africa, the Caribbean and South America as the most appropriate carbohydrate source for diabetes mellitus patients on the stated assumption that plantain contains iron.

The facts about seed, fruit and root source of carbohydrate are set up in the table below (Table 1). It is clear that the edible portions of banana and plantain are carbohydrate and contain less iron than rice and corn meal. But there is more.

Table 1 (Source, USA national nutrient data base, from ND nutritiondata.com 29/03/06)

Source(100gm)	Carbohydrate(gm)	Minerals(mg)	Energy/Sugars(mg)
Rice, white long grained	80	K. 115 Fe 4.3	0.1
Corn Meal	75.6	K 434 Fe 3.8	3.8
Plantain, Raw green	31.4	K 492 Fe 0.6	14.8
Banana, Raw green	24.3	K 358 Fe 0.3	12.6
Cassava, Raw	38	K 274 Fe 0.3	1.7
Yam, white Raw	27.8	K8 12 Fe 0.6	0.5
Potato, White	21	K 533 Fe 1.0	1.3

The matured fruit of all varieties of banana and plantain ripens or turns yellow. Ripening involves the conversion of the carbohydrate into sugars by the two endogenous enzymes—amylase and alpha-glucose-amylase. The amylase cuts up the simple, branched, long-chain carbohydrate molecules into short, straight molecules (dextrin). The alpha-glucose-amylase then, converts the dextrin to sugars, of which about one half is glucose. This accounts for the sweetness of the ripened fruits.

Tennis players have known about this all along! During intervals in the play, they ingest ripe banana to boost their energy with the glucose produced. Industrially, these enzymes are used to convert corn (maize) to syrup and cassava into sugars that are, in turn, converted into alcohol by yeast. The human body secretes the enzymes, amylase and alpha-glucose-amylase, to convert ingested carbohydrate to glucose as the body's source of energy.

Consuming banana and plantain (ripe or green) and their products puts, not only glucose directly into the blood plasma quickly, but also, additional digestive enzymes into the digestive system. The net effect is that more carbohydrate is converted to glucose faster. A very efficient sugar factory.

The clinical consequences are clear: type 2 diabetes mellitus patients on a diet of banana and plantain, will have unexpectedly high plasma glucose readings that cannot be lowered by tablets alone. They end up using insulin (a fat producing enzyme) as additional means of controlling plasma glucose levels.

To avoid the disadvantages of insulin dependence, type 2 diabetes mellitus patients are better advised to avoid the fruit-sourced carbohydrate and stick with any or all of the seed- and root-source carbohydrates in moderation. Tablets, rather than insulin, will be enough to control plasma glucose level.

Avoiding banana and plantain diet by Type 1 patients would reduce the incidence of hyperglycaemia/hypoglycaemia due to uncertainty in gauging appropriate quantity of insulin required by the patient.

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Conflict of interest

Author declares that there is no conflict of interest.