ABSTRACT

BACKGROUND AND OBJECTIVES

Diet is one of the corner stones in the management of diabetes mellitus.

There are various forms of corn meals and it is not known which of the locally available corn meals in Nigeria are suitable for persons with diabetes mellitus. This study evaluated the plasma glucose response to four corn meal preparations and the concurrent plasma insulin response to two of them with a view to determining their glycaemic indexes.

SUBJECTS, MATERIALS AND METHODS

Sixteen non-diabetic adult Nigerians and sixteen adult persons with type 2 diabetes mellitus participated in this study. All subjects consumed corn meal preparations of pap, boiled corn, roasted corn and corn flakes. Blood samples for plasma glucose estimation were taken fasting and half hourly over a two hour period after administration of a glucose load or from start of corn meal consumption. Blood samples for plasma insulin estimation were concurrently taken for two corn meals (boiled and roasted corn) in 10 non-diabetic subjects. Plasma glucose responses were assessed by the peak plasma glucose concentration
(PPG), maximum increase in plasma glucose (MIPG), 2 hour postprandial glucose level (2HPPG), incremental area under glucose curve (IAUGC) and glycaemic index (GI). Plasma insulin responses were assessed by peak plasma insulin and (PPI) and incremental area under insulin curve (IAUIC).

**RESULTS**

Corneflakes and boiled corn had relatively higher glycaemic indexes than pap and roasted corn as listed: corn flakes (88.1%), boiled corn (82.2%), roasted corn (76.5%) and pap (71.7%). The comparison of each glycaemic response were similar in the non-diabetic subjects (P = 1). The incremental area under the glucose curve (IAUGC) and 2-hour postprandial glucose level (2HPPG) of cornflakes in persons with diabetes mellitus were significantly greater than those of boiled corn (P>0.05) for both indices. The maximal increase in plasma glucose of cornflakes was significantly higher than that of pap in persons with diabetes (4.1 ± 0.3mmol/L vs 2.7 ± 0.3mmol/L, P<0.05). The incremental area under the plasma glucose response curve for cornflakes was also significantly higher than that of boiled corn (292.6 ± 25mmol.min/L vs 181 ± 27 mmol.min/L, P<0.05). The incremental area under plasma insulin response curve for boiled and roasted corn in non diabetic subjects were comparable (282.8 ± 51.7µIU. min/mL vs 299.2 ± 49.7µIU. min/mL, P>0.05). plasma insulin showed a poor relationship with plasma glucose at various time point. (P>0.05) for all comparisons.
CONCLUSION AND RECOMMENDATIONS

The glycaemic response after ingestion of the corn meals in persons with diabetes were higher than those of the non-diabetic subjects. The mean fasting insulin level of the non diabetic subjects were similar to those reported in other studies done in Nigeria. Measured amounts of pap and roasted corn can be taken as meals by persons with diabetes mellitus. There is the need to study mixed meals of the corn meals and legumes.