

**FOOD RESEARCH INSTITUTE**  
(C.S.I.R.)

**MANUFACTURE OF GLUCOSE SYRUP FROM  
ROTTEN PLANTAIN (*MUSA PARADISIACA*)**

by

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SUMMARY

Glucose syrup samples were produced from fresh rotten plantain and dehydrated rotten plantain (*Musa paradisiaca*). The Dextrose Equivalent of the glucose syrup samples from the fresh rotten plantain and the dehydrated rotten plantain were 54 and 57 respectively.

INTRODUCTION

Glucose syrup is the hydrolytic product of starch. It finds uses in the confectionery, soft drinks and pharmaceutical industries. In the developed countries glucose syrup is manufactured from starch derived from corn and potato.

In Nigeria and Ghana glucose syrup has also been produced from cassava starch F.L.R.O. (1974) and Ankrach (1976).

In this work the problems associated with the manufacture of glucose syrup from rotten plantain (*Musa paradisiaca*) are investigated on laboratory scale.

## EXPERIMENTAL

### Method

Two samples of glucose syrup were manufactured separately from fresh rotten plantain and dehydrated rotten plantain as follows: For the fresh rotten plantain 100g were mixed with water and made up to 200ml in volumetric flask. For the dehydrated rotten plantain about 50g were mixed with water and made up to 200ml.

The two mixtures were then autoclaved at 121°C for 20 minutes after adjusting the acidity to pH 2 by adding 50% HCl. After cooling the pH was adjusted to pH 5 with 45% NaOH. The mixtures were filtered. the filtrates were then concentrated to about 80% solids and allowed to cool to obtain the glucose syrup samples.

### Chemical Analysis

#### Total Solids

The total solids were determined by oven drying method as follows: About 5g of the glucose syrup was weighed and mixed with and contained in platinum dishes. The sample was dried in oven at 105°C to a constant weight according to the method of the A.O.A.C. (1970). The total solids content was calculated as the difference between the weight of the glucose syrup and the moisture content.

### Sugar determination

About 10g portion of the glucose syrup sample from the fresh rotten plantain and about 5g portion of glucose syrup from the dehydrated rotten plantain were each made up of 100ml. After suitable dilutions indicated in Table 1, the invert sugar was determined by Lane and Eynon's method using 10ml Fehling's solution (Pearson, 1970).

The Dextrose Equivalent (DE) of the sample was calculated from the ratio:

$$DE = \frac{\text{reducing sugar expressed as dextrose}}{\text{Total solids in dry syrup}} \times 100$$

### RESULTS AND DISCUSSION

The quality of the glucose syrup samples from the rotten plantain is presented in Table 1. The Dextrose Equivalent (DE) of the glucose syrup samples from the fresh rotten plantain and dehydrated rotten plantain (*Musa paradisiaca*) are 54 and 57 respectively. The figures fell within the high acid conversion syrups with DE 52 to 57 reported by Brautlecht (1953).

Considered as a value added product from rotten plantain glucose syrup will earn more foreign exchange on the export market.

The next phase of the work will aim at finding foods and other preparations in which the glucose syrup from rotten plantain can be used.

Table 1: Quality of Glucose Syrup Produced from Rotten Plantain  
and Dehydrated Rotten Plantain (*Musa paradisiaca*)

Description of sample	Total Solids (%)	SUGAR DETERMINATION					Dextrose Equivalent (DE)
		Weight of syrup (g)	Titre for 10ml Fehlings Soln (ml)	Invert Sugar per 100ml Soln. (mg)	Dilution factor	Invert Sugar (%)	
Fresh rotten plantain	80.99	10.1559	28	175.5	25	43.94	54
Dehydrated rotten plantain	76.53	5.9191	19	260.0	10	43.93	57

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