

**STRENGTHENING FOOD AND BEVERAGES QUALITY
STANDARDS AND SAFETY AS A STIMULANT FOR
INDUSTRIAL GROWTH**



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FOOD THICKENERS FROM YAM, CASSAVA AND COCOYAM FOR INDUSTRIAL OPPORTUNITIES IN NIGERIA

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INTRODUCTION

Thickeners or stabilizers are usually substances, other than natural food substances, which are capable of maintaining the uniform dispersion of two or more immiscible substances. There is, however a long list of natural or modified natural food substances which do not fall within this definition, but which act as thickeners (Blanchfield, 1969). These are natural and modified starches such as starches from yam, cocoyam and cassava.

Pure starch added to food influences the texture and consistency. The properties of starch which are of direct interest to the food manufacturer are colour, freedom from dirt, fibre, viscosity, body gel properties and extent of gelation on heating in the presence of water as an aqueous media (Radley, 1976).

Demand for thickeners from cassava and other root and tubers has increased world-wide with the use of starches from cassava and potato extensively in the production of jelly confectioneries, gravies and soups, salad dressing, biscuits and pharmaceutical products.

There is need to carry out research and development on starches from locally available roots and tuber crops. This would encourage demands for locally processed raw materials for the food and pharmaceutical industries, thereby, reducing the dependence on importation of food thickeners. FIIRO has carried out extensive research in the development of thickeners from cassava, yam and cocoyam.

MATERIALS AND METHODS

The availability of yam, cassava and cocoyam for processing was established from publications of Federal Office of Statistics (FOS), Federal & State Ministries of Agriculture and Central Bank of Nigeria (CBN).

The industrial use of food thickeners from yam, cassava and cocoyam was established from literature and through investigation. Industrial uses identified, the companies that are current and potential users of food thickeners were identified based on their products using the industrial directories, publications of National Association of Small Scale Industries (NASSI), National Association of Small Medium Enterprise (NASME), Manufacturers' Association of Nigeria (MAN) and Nigerian Association of Chambers of Commerce, Industries, Mines and Agriculture (NACCIMA).

Industrial survey was carried out using structural questionnaire to establish the demand for thickeners from local root crops and create awareness of the use of thickeners from local root crops by the Nigerian Food and Pharmaceutical Industries.

Economic studies were carried out to establish the economic benefit of local processing of food thickeners from root crops and potential of local substitution for imported raw materials.

RESULTS AND DISCUSSION

Many local cultivars of cassava, cocoyam and yam are cultivated and produced in Nigeria. The most widely grown varieties of yam are *Dioscorea rotunda* and *D. cayenseisis* (Kuku, 1985). The average annual production from 1990 to 2000 according to CBN, is 19.5 million tons. Nigeria accounts for 60-70% of estimated 20-25 million ton/year annual world production (FAO,).

The major cassava producing states Edo, Imo, Oyo, Anambra, Benue, Rivers and Cross River produce from 100,000 tons to 463,000 tons while the medium cassava producing states Kwara and Ondo produce between 50,000 tons and 100,000 tons per annum (Ugwu, et.al. 1992).

Between 1990 and 2001, 13,084 tons of cocoyam were produced (CBN, 2000). These show great potential for processed cassava, yam and cocoyam starches in the Nigerian Food and Pharmaceutical Industries which depend largely on importation. Total import of food thickeners from 1990 to 2001 was 568,578,877kg at a value of N7,964,707,704 while that of modified starches from 1996 to 2001 was 39,398,565kg at a value of N2,014,871,066.

Table 1 presents the result of the survey of the food and pharmaceutical industries in Nigeria. The products of the companies used as respondents include: biscuits, confectioners, dairy products, tablets and syrups. The survey revealed that 50% of the respondents use synthetic thickeners. The quantity used ranged from 50kg to 25 tonnes per annum at a cost of N1,000 to N6,700 per ton. Some companies are using pregelised maize and potato starches. The potential users would prefer locally produced thickeners from local crops if the starches produced are free from cyanide, heat and shear stable and does not retrograde. However, the need for product reformulation was highlighted.

Local starches from these materials have been proved by pharmaceutical research to be useful for tablets. Over the years, scientists in the West African region have made efforts at developing adequate methods of producing pharmaceutical grade starches for the industry. Also continued research efforts in the production and modification of starches from food sources will prove invaluable to the economy.

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TABLE 1: INDUSTRIAL OPPORTUNITIES FOR FOOD THICKENERS FROM CASSAVA, YAM AND COCOYAM IN NIGERIA

TYPE OF INDUSTRY	PRODUCTS	USE OF THICKENERS FROM CASSAVA, YAM & COCOYAM IN PRODUCTION	TYPES OF THICKENERS USED	SOURCE OF THICKENERS	WILLINGNESS TO USE THICKENERS FROM LOCAL ROOT CROPS
FOOD	Biscuits	None User	-	-	Pure Cassava starch is free from cyanide can be used as Substitute for wheat flour
	Biscuit, wafers, corn flakes	-	-	-	-
FOOD	Dairy products Chocolate, Milk, Ice-cream, Lollies	None user	Food gums, LBG, combined emulsifiers, stabilizers, Xanthan	Imported	If the thickener is heat stable and does not retrogate
FOOD	Biscuit, Bread	None user	-	-	-
PHARMACEUTICAL	Antibiotics, syrups, tablet & suspension	None user	Providone, (Polyvinyl Pyrrolidone) quagum Pregelised maize Starch, Acacia, Gelatine	Imported	The local starches have been proved to be useful for tablets, yes but there will be need of reformulation
PHARMACEUTICAL	Anti-malaria tablets Paracetamol and cough syrups	None user	Sodium Carboxyl, Methyl cellulose	Imported	Willing to use but there will be need for reformation
PHARMACEUTICAL	Worm expellers, Oral antiseptic formulation Antibiotics	None user	Potato starch Maize starch Synthetic thickeners	Imported	Willing to use if compatible and competitive with others being used