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TRADITIONAL FOOD PACKAGING MATERIALS IN GHANA

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TRADITIONAL FOOD PACKAGING MATERIALS IN GHANA

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Introduction

THE ESSENCE of food packaging is to provide protection for food products and also facilitate their storage, handling and merchandising. Good packaging adds to product appeal and enhances its saleability.

Food packaging in Ghana is in its embryo stages of development and although various methods of packaging foods are known in the country most of these lack standardization, process and sanitary control. This situation is aggravated by ignorance of the importance of modern practices in food handling and preparation and also by apathy (of the public) to the problem as a whole.

This work, a follow-up to a general survey on food packaging in Ghana conducted by an FAO specialist in mid-1967,[1] attempts to identify the specific problems in traditional packaging and make suggestions for improvement.

The study comprises two sections—a market survey and a laboratory test of the performance of the materials.

The survey

Procedure

Questionnaires were prepared and used as a basis for interview in nine public markets in the Accra metropolitan area.[2]

Questions were put to the traders directly or through interpreters where need be. Among the factors selected for the interview were availability and supply of the packaging materials, costs, functional properties, sales appeal and the shelf-life of the foods packaged in them.

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[1] "Food Packaging in Ghana": Report with Comments and Recommendations, by Erick Wallenberg, Food Packaging Technologist, UNDP/FAO, FAO, Rome, September, 1967.

[2] Makola (Nos. 1 and 2), Salaga, Kaneshie, Zongo, Mamprobi, Nima, Kantamanto, Brigade Camp (Okponglo) and Korle Gonno.

Results

The results indicated that traditional packaging materials were of two kinds: those used for "permanent" packaging of food; e.g. corn sheath on Ga kenkey, and those used as "temporary" wrappers—on foods consumed soon after purchase; an example being waste stationery used in wrapping fried plantain chips, cocoyam, etc. Each packaging material may further be classified as natural or synthetic. The natural materials—generally of plant origin (corn sheath, banana leaves) are seasonal hence they are liable to price fluctuations. In addition transport difficulties also cause periodic shortages. The synthetic variety includes newspaper, cement paper, waste stationery and old magazines.

Traditional packaging materials are used in processes involving moulding, forming and mapping of foodstuffs—operations which are extremely time-consuming. The basic function of the materials appear to be to hold the food product together and also prevent it from external contamination.

There are no specifications governing the type and quality of packaging materials in use, thus buyers are compelled to purchase what is offered on the market. However, the price of the traditional packaging material is reasonable. As a rule, the cost of a sack load of the material, such as corn sheath, fluctuates, but that of single units remain fairly constant. It is not known, however, how much of the selling price of a food product is charged to packaging.

Generally packaging materials are improperly handled prior to use. Many are kept in the open or under a shed where they are subject to contamination of various sorts.

No information appear to be available on the shelf-life of food products packaged traditionally. Later laboratory studies (*see* below) however, showed that some of Ghana's traditional foods do not have long shelf-life.

Laboratory studies

Procedure

As a corollary to the survey, samples of the packaging materials were collected and studied. Samples of *agidi*, Ga and Fanti *kenkey*[3] were purchased fresh. Two of each kind were wrapped in aluminium foil and polythene respectively, and a third was left as purchased. All three were exposed to normal environmental conditions by being placed on laboratory shelves for five days.

Results

The results showed a more rapid and extensive fungal growth in those items which were wrapped in aluminium foil and polythene than those unwrapped. Apparently this growth was generated by condensation of water vapour from the warm foods inside the wrapper, creating a high-humidity environment. The growth, evidently, is responsible for discoloration and rottening of the fibres of the packaging material and consequent reduction in its strength. (Certain foods such as those tested themselves contribute to fungal growth as all are products of fermentation.)

It was observed that the shelf-life of the Fanti kenkey was the longest of the three products tested. For after one week, the contents were still edible. From experience, this food product could be kept for fourteen or more days and still be edible. The long keeping

[3] All cooked products of fermented maize/dough.

quality of this product can be attributed to the use of at least five layers of material (banana leaves) in packaging and to its relatively smaller moisture content as compared with Ga kenkey. In addition, unlike Ga kenkey the Fanti variety is fully covered with the packaging material thus contamination of its contents from external deteriorating influences is negligible. The agidi, like Ga kenkey is loosely packaged with a layer or two of material. Presumably this looseness exposes the contents to extraneous deteriorating agencies.

Discussion

The primary purpose of a food package, from public-health standpoint is to protect its content (the food) from contamination. However, the necessary attributes of a satisfactory package are many. They include strength and rigidity to withstand rough handling; ability to provide a barrier against the passage of materials to and from the food; ability to be easily fabricated, assembled, filled, sealed; and above all ability to serve as a convenient unit for sale and distribution of its food content.

Many of these attributes are lacking in our traditional packaging materials. The materials of plant origin, for instance, do not lend themselves easily to fabrication because of the possession of central or lateral veins which interfere with the process. Where the materials break, there is a tendency for pin-holes to develop, consequently the contents easily pick up moisture and odour from the external environment. This state of affairs is most prevalent in the packaging material for *aboloo*[4] and kenkey.

Traditional packaging materials also transmit distinct flavours to their food contents. Such a flavour can be detected in Fanti kenkey normally wrapped in banana leaves. In some cases (as in Fanti kenkey) the flavour may contribute to desirability.

Generally most of the traditional packaging materials are able to withstand strong heat-treatments by virtue of their high physical strength. Again banana leaves used in the wrapping of Fanti kenkey may be mentioned.

One of the most important problems in traditional food-wrapping is the occasional transmission of printed matter to food. Where the ink used in printing contains a toxic or noxious substance public-health problems are raised. So far, the cumulative effect from eating foods so contaminated has not been determined. Other wrappers which directly impart contamination to food include cement paper.

Conclusions and recommendations

To be able to meet basic packaging requirements existing materials having specific properties may have to be combined by the processes of lamination, coating, etc., and perhaps also, be produced in rolls to facilitate their subsequent machine-handling. The possibility of manufacturing packaging materials from those in use at present should, therefore, be considered.

[4] Fermented maize product, either baked or cooked by steam.

A joint public health/food industry investigation should be carried out to assess the extent of food contamination through packaging and wrapping materials, and their possible effects on the human body.

Where necessary laws must be made to prohibit the use of those materials with known public health hazards. When that happens, alternative cheaper materials must be provided in their place.

Possibly performance evaluation tests should be carried out on packages or their segments in order to provide a basis for the selection of the most desirable functional design and also enable quality to be maintained once the property design has been selected.

APPENDIX I

FANTI KENKEY

Day	% RH/°C	UNWRAPPED SAMPLE (CONTROL) Observed changes		SAMPLE IN POLYTHENE BAG Observed changes		SAMPLE IN ALUMINIUM FOIL Observed changes	
		Flavour	Appearance	Flavour	Appearance	Flavour	Appearance
1	70/27.5	Normal	Normal, fresh.	Normal	Normal, fresh.	Normal	Normal, fresh.
2	76/26.0	Slight	Slight mould growth	Slight	Steam condenses in polythene; slight mould growth on wrapper.	Slight	Water vapour condenses inside foil; product appears fresh, but mould growth begins.
3	70/27.0	Same as above.	Slight mould growth	Same as above.	Steam still condenses in polythene white mould growth becoming extensive.	Same as above.	White mould growth becomes extensive.
4	74/26.5	Same as above.	Mould growth lessens; Contents of packages begin to harden.	Same as above.	Condensed water vapour becomes whitish in colour; white mould growth increases.	Same as above.	White mould growth increasingly extensive.
5	72/27.0	Same as above.	Same as above with slight increase.	Same as above.	Same as above with slight increase.	Same as above.	Wrapper still moisture-laden; product considerably soft; white and yellow mould growth extensive.

APPENDIX II

GA KENKEY

Day	%R.H./°C	UNWRAPPED SAMPLE (CONTROL) Observed changes		SAMPLE IN POLYTHENE BAG Observed changes		SAMPLE IN ALUMINIUM FOIL Observed changes	
		Flavour	Appearance	Flavour	Appearance	Flavour	Appearance
1	70/27.5	Normal	Normal, fresh.	Normal	Normal, fresh.	Normal	Normal, fresh.
2	76/26.0	Slight	Product—dry and hard externally; no change in wrapper.	Slight	Mould appears; "native" packaging material, i.e. corn sheath starts to dry out.	Slight	White mould growth.
3	70/27.0	Same as above.	Product dry outside with white mould growth; light brown colour change outside.	Same as above.	Mould growth becomes extensive.	Pronounced.	White mould grows becomes extensive.
4	74/26.5	Same as above.	Mould growth becomes multi-coloured; wrappers extremely dry and product very hard.	Same as above.	Mould growth now extensive and prominent; condensed water vapour whitish.	Smell mouldy.	Product completely deteriorates; mould of all shades of colour now covering product.
5	72/27.0	Same as above.	Same as above.	Same as above.	Same as above.	Same as above.	Product now difficult to identify—due to high degree of spoilage; complete coverage with mould.