THE CANNING OF A TRADITIONAL KENYAN DISH:

With particular reference to improving the quality and acceptability of a canned composite dish of banana, potato and meat locally known as "ndizi, viazi na nyama".

by

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ABSTRACT

This project initially involved a survey of the traditional dishes in Kenya. From this list, one dish was to be selected and developed in conjunction with a suitable preservation method. A composite dish of banana, potato and meat was selected and preserved by sterilisation in cans. This dish is normally called "ndizi, viazi na nyama" but for the sake of brevity it will be referred to further as "ndizi na nyama".

The traditional recipe for "ndizi na nyama" was standardised and the ratio of the main components as well as onions and spices adjusted on the basis of sensory rankings. The various recipes were prepared in the department's experimental kitchen.

A rotary autoclave was used to investigate the optimum processing parameters and raw material properties required. Initially, banana, potato and beef were canned and assessed as separate components in order to determine which was, in terms of final product quality, the most sensitive to the heat sterilisation and storage conditions used. The final product quality of the canned components was assessed on the basis of heat transmission rate data, process lethality values, and organoleptic evaluations after 3-4 weeks of storage at 25^{o}C.

The banana component appeared to be the most sensitive and the future canning process was designed

with this in mind. To ensure that each component was adequately cooked by the end of the canning process and had received well in excess of "the minimum botulinum cook", the banana, potato and meat were pretreated in hot oil under different conditions of time and temperature.

Satisfactory organoleptic scores for the canned components were achieved when Matoke bananas and Meru potatoes were cut into slices of 1 cm thick, and "silverside" beef (biceps femoris) cut into dices of approximately 5 grams in weight. The optimum pretreatment in hot oil for banana and meat was 150°C for one minute; for potato this was 180°C for half a minute. A very good canned product was produced when the pretreated components were combined with the correct proportions of salt, curry powder, onion and water in 301 x 409 cans and sterilised at 125°C for two minutes.

A large batch of the canned "ndizi na nyama" was produced on the basis of the predetermined proportions, pretreatment conditions and processing parameters. A sensory analysis was carried out to compare this canned product with the product prepared under standardised kitchen conditions to establish whether any difference could be detected and if so which of the two was preferred. The triangle test results indicated that the 20 member panel could not detect any difference between the two products.

A basic analysis of nutrients in both the kitchen-prepared and canned product, including the oil absorbed during frying and pretreatment, respectively was carried out. The results indicated that 100 grams of the kitchen-prepared product contained approximately 3 g protein, 6 g fat, 6 mg vitamin C and 460 kJ of physiologically available energy. This compares with 100 grams of canned product which contained approximately 6 g protein, 3 g fat, 6 mg vitamin C and 403 kJ of physiologically available energy. Starting with 100 grams of mixed raw foodstuffs (40 g slices of banana, 40 g potato and 20 g meat) the analysis showed that the initial vitamin C content of approximately 12 mg was reduced to 9 mg after pretreatment and then to 8 mg after sterilisation.

After consultation with three local canning firms, a cost analysis of the canned dish was carried out (including estimates for processing costs, packaging materials, administration costs, distribution costs and profit margins) and it was found that for the proportions of ingredients used it would cost the consumer 10.95 K.Shs. for one 443 g (net weight) can of "ndizi na nyama" from the retailer.

Finally, a small-scale consumer survey was performed to determine whether name, price, quantity, appearance, flavour and texture of the canned product were generally acceptable to a cross-section of consumers of various income groups. A total of 66 employees of

the University of Nairobi, Kabete Campus, were interviewed for this purpose. The results of this survey indicated that 45% of all the respondents proposed the name "viazi, ndizi na nyama" and 33% accepted the name "banana and meat dish". All the respondents appeared to like the dish. 90% from every income group indicated that they liked the dish either moderately or extremely. The low and medium income groups declared the dish suitable for lunch only whereas most members of the high income group found it suitable for lunch as well as supper. The survey further revealed that 18% of the low-, 4.5% of the medium- and 13.5% of the high-income group were prepared to pay 11 K.Shs. per tin of product. However, by suitable changes in the manufacturing and packaging techniques it was calculated that the price could be reduced to 8 Shs for 443 g net product at which price 87% of the consumer panel composed of representatives from all the three income groups, would be prepared to buy the canned dish.

The analysis of nutritional content as well as the consumer survey indicates that the industrial-scale manufacture of the canned "ndizi na nyama" could be a viable proposition.