SURVEY ON PROCESSING OF CATTLE HIDES INTO "WELE" FOR SALE AS FOOD IN GHANA

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SUMMARY

A survey was carried out in Accra to find out the method of processing "Wele" a meat product produced from cattle hides. The survey revealed that during the initial processing (singeing) of the hides, scrap rubber tyres were used as a cheap source of fuel.

Consultations with Bonsa Tyre Company Limited and Chemistry Department, University of Ghana respectively, contributed in throwing more light on the chemical ingredients that go into tyre production and the probable toxic components that may be imparted to the end product. Suggestions for further work in this area are also given.

ACKNOWLEDGEMENT

I acknowledge with gratitude the invaluable contribution given by the following organisations: Bonsa Tyre Company Limited and Chemistry Department, University of Ghana. My thanks also go to the Director of Food Research Institute for his useful comments and initiating the commencement of this survey.

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C O N T E N T

LIST OF ILLUSTRATIONS

INTRODUCTION

The word "Wele" is a Ga term applied to processed cattle hide offered for sale on our local markets as a meat product.

The product is commonly eaten by many people throughout the country in soups and stews and sometimes cooked and skewed on sticks and sold like common khebabs.

The hides are initially semi-processed by organised groups of young men usually near slaughter houses where the raw hide is obtained. Presently, and in Accra, one major location where the hides undergo initial preparation is a place near the banks of Korle Lagoon behind the new yam market.

The initial burning off hair (singeing) on the hides using worn out tyres as a source of fuel has raised doubts in the minds of many people and has also become a question of concern to the local media.

This script was therefore compiled to outline the processing of the product and also attempt to find probable explanations to the possibility of any toxic influences on humans steming up from cattle hides being processed with rubber tyres and also of any pollution to the environment as a whole.

2. BACKGROUND INFORMATION

In Ghana various livestock are slaughtered for their meat. They include cattle, sheep, goats and pigs.

In Accra two main slaughter houses exist, the official government slaughter house (now under renovation), and that belonging to the Meat Marketing Board. Cattle hides from these slaughter houses are sold to middlemen who inturn sell them to processors.

Two main processing groups exist, one group process the hides into leather in local tanneries and the other into human food (wele).

With sheep and goats, the hides are either left intact on the carcass or removed and dried to be used as mats or bedding material. When hides are left intact on the carcass, they are singed once again using scrap rubber tyres.

Processing of cattle hides into "wele", a long time traditional process has come to stay because of the demand for the product as a source of meat.

The initial processing involves the use of a constant supply of heat (naked fire) to carry out singeing of the raw hides. Firewood, the common fuel material for such purposes have been found very expensive to the initial processors for this purposes. Besides they will require large quantities of the fuel material to singe the hides completely. The processors have therefore resorted to the use of a cheap and readily available alternative fuel material, viz, worn out tyres and scraps from tyres often obtained from people engaged in the production of the local tyre footwares.

It was also observed that sometimes synthetic scrap rubber from local footware factories are also used as a source of fuel.

3. METHOD OF PROCESSING

The raw material for the production of "wele" as was stated above is normally obtained from the local slaughter houses. This is the raw cattle hide. Cattle hides dried and stored can also be used as a raw material for the production of "wele" thus, two main methods for processing of the product exist depending on the raw material used.

3.1. Processing with fresh cattle hides

This method involved the use of fresh hides straight from the slaughter house. The hide is cut into sizable pieces and rolled up (hair side out) (see Fig. I below). The rolled ends are then tied up with scrap wire obtained after burning the tyres (Fig. II below).

FIG. I. Rolled cattle hides to the left front of picture.

FIG. II. To the background, behind the fire place shows a pile of sisal wires

FIG. I. Rolled cattle hides to the left front of picture.

FIG. II. To the background, behind the fire place shows a pile of scrap wires obtained after burning tyres.

The fireplace is constructed with car tyre rims or block of stones arranged in two parallel lines and separated by a distance of about one meter. On top and across these supports are placed two parallel cylindrical metal rails. The fire is made below this arrangement and the rolled hides are placed (one next to the other) on the rails (Fig. III below). The heat from the fire (produced by the burning tyres) burns the exposed hair off the hide. With intermittent turning, all the hair on the rolled hide will be burnt away and the hide is removed from the rails.

FIG. III. Picture shows rolled cattle hides being singed in the fireplace.

The next step is to unroll the tied hides and roll in up again, this time to expose other parts of the hide which did not receive flame action previously. This process is repeated. Usually up to three applications on the fire are enough to completely burn off all the hair on the hide whilst the latter is still rolled up.

The hide in this form is taken away by the middlemen who unroll and thoroughly wash the hides with clean water and sponge. The hide is then cut into sizable pieces and cooked (up to 6 hours) in a large aluminium pot. The cooked hide swells up during this process but still only slightly tender. Cooked hides are then soaked in water overnight. The process is said to leach out bitter taste from the hides, whilst rendering them a little tender. After this process the hide is rinsed with clean water and is ready for the market. The market women further cut the hides into smaller retail pieces. During the period of holding by the market women, believed to be about 3 days, the hides are kept in water in plastic containers.

3.2. Processing with dry cattle hides

This method of hide preparation involves the use of dried hides as the starting raw material. The hides are first soaked in drums overnight to soften after which the same processes as outlined above are followed to obtained the end product.

3.3. Processing of "Totobi"

There is yet a third method of preparing hides for food. This method produces a fermented type of product called "totobi". This product is however not very common on Accra markets. The method of processing starts with as usual fresh cattle hides, this time rolled up (hair side inwards) and then packed in thick polyethylene bags which are then either buried in the soil or stored in plastic containers.

The hides are left in this condition for about 3 to 7 days. Autolytic breakdown of hide tissues and fermentation reactions occur during this period. The hide is rendered very tender and has a distinct off-odour.

When hides are removed after this period, they are spread out and the hair is easily scraped off the skin. The hide is then spread on heated aluminium sheet or an a grill for drying. The hide is ready for the market after this drying process.

4. POSSIBLE IMPLICATIONS OF PROCESSING METHOD ON END PRODUCT

4.1 Source of fuel material

The fuel material for the initial processing (singeing) of cattle hides in Accra is scrap rubber products from tyres and footware factories. The most popularly used fuel material is scrap tyres (see Fig. IV below).

Consultation with Bonsa Tyre Company Limited revealed the ingredients that go into the manufacture of tyres.

The rubber base for tyre manufacture is either natural or synthetic (one form obtained by the copolymerization of styrene and butadiene to form SBR rubber). To this rubber base are added a number of ingredients, their kind and levels depending upon the type of rubber and product required. Some of these ingredients include zinc oxide, stearic acid, processing oil, antioxidants, oxidants and ozonants, accelerators, sulfur, resins, carbon black, etc.

The manufacturing process involves so many complex stages some of them being grinding, mixing, calendering, assembling and curing (vulcanization).

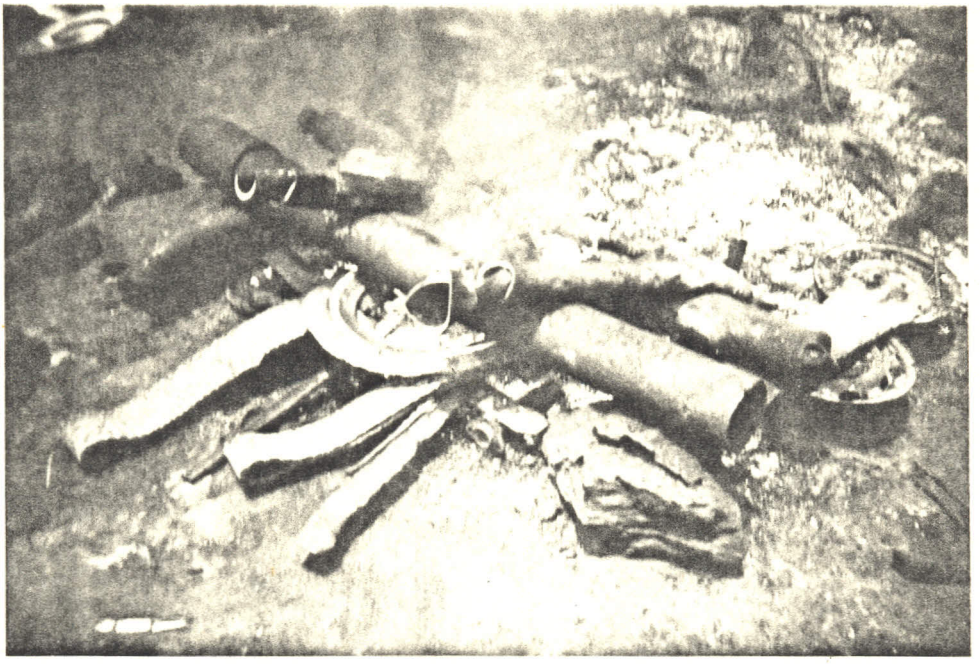

FIG. IV. Picture shows scrap tyres being burnt to singe cattle hides.

4.2 Burning of tyre products and its implications

It is a common scene to observe thick black smoke during the burning of tyre products. (see Fig. V below). From the standpoint of pollution alone, one would agree to the fact that burning tyres will add a lot of unwanted pollution to the atmosphere as a whole.

Consultation with the Chemistry Department, University of Ghana, further explained that this incomplete combustion of tyre will be associated with the evolution of carbon monoxide, sulfur dioxide and possibly its acid derivatives, and a whole chain of other hydrocarbon compounds. It is also well documented that the hydrocarbon fraction of wood smoke carry some toxic components, best known being the polyaromatic hydrocarbon groups, for example pyrene (Fig VI)and its derivatives like 1, 2 and 3, 4 - benzopyrenes. These compounds have been implicated as cancer suspect agents. It has also been observed clinically (Dr. E.A. Mensah, Ministry of Health, personal communication) that these polyaromatic hydrocarbon compounds have serious effects on especially the liver and kidney when ingested.

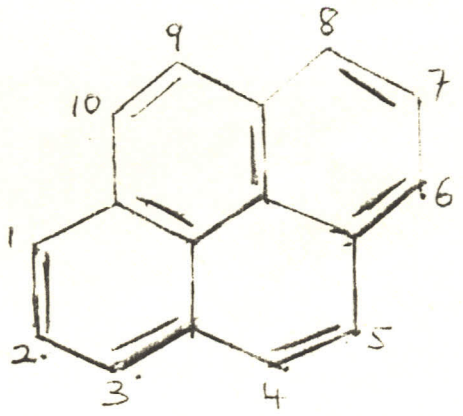

Fig VI. Pyrene.

FIG: V. Picture showing evolution of thick black smoke from burning scrap tyres during the singeing of cattle hides.

If such similar compounds are evolved during the singeing of cattle hides with tyre products, then the practice can be seen to be possibly dangerous from the standpoint of the following facts:

i. That this creates a lot of pollution to the environment

ii. That the cattle hide will be subjected to any toxic smoke components evolving from the burning tyre and that some of these components may be absorbed into the tissues of the hide.

iii. That some of these toxic components may not be readily leached out by soaking hides in water.

iv. That even though wood smoke may contain some toxic components, and it is still the known accepted method of smoking meat whilst singeing cattle hide by burning scrap rubber tyres looks grossly unacceptable.

5. CONCLUSION

From the above discussions, one would say with caution that there is possibly some danger associated with the practise of singeing cattle hides using burning rubber tyres.

One question left unsolved however, is exactly what toxic components and at what levels are left with the end product (wele) at the point of selling on our markets? The answer would probably give us a better insight into the actual health hazards which this practise may have. A proper commissioning of this problem, accompained with adequate funds by the government of Ghana to the Food Research Institute, in collaboration with other research organisations will help to throw more light on the solutions to this problem.

6. FURTHER WORK

There is the need to carry out organised research work on "wele" samples sold on our markets to find out the presence and levels of any toxic components in the samples.

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