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ABSTRACT

This study was conducted to determine the different cuts and nomenclatures of beef and edible offal fabricated, merchandised and utilized in Nigeria using Kano and Maiduguri as centres for data collection. Results obtained indicated that twenty two cuts may be fabricated from one side of a carcass and about the same number of edible offals merchandised. Four wholesale cuts/parts and a number of semi-wholesale, retail and inferior cuts/parts were recognized. The eating quality of the cuts was rarely considered in merchandising but was a factor in the choice of cuts for use in the various locally prepared meat products/dishes produced in the study areas. More than one nomenclature may be used for a cut and slight variations existed among beef fabricators in their style of cutting. The butchers interviewed were in general familiar with the nomenclature of the cuts, but most of the meat buyers/consumers interviewed were largely ignorant of them. It is the conclusion of this study that standardization and adoption of these cuts and nomenclature would enhance the merchandising and utilization of meat in Nigeria and may form the basis upon which a viable meat industry could be built in the country.

Key words: Beef, Fabrication, Utilization, Merchandising, Offals, Industry, Nomenclature, Muscles.

INTRODUCTION

Nigeria is estimated to have about 12 to 14 million heads of cattle, 95% of which is located in the Northern part of the country (Anon, 1992). About 2,000,000 heads of cattle is slaughtered

yearly with beef and veal production amounting to 256,000 metric tonnes (FAO, 1990). In spite of the number of animals Nigeria is blessed with the meat and poultry industry in the country is yet to reach an economic industrial level (Alonge, 1991). Some of the reasons given for the failure of the meat industry in Nigeria include: (1) the inefficient owner-butcher-retailer processing system that is obtained in the country; (2) lack of suitable local alternatives for processing beef; (3) spatiality of animal production; (4) seasonality of the sales of animals; (5) lack of standardized system for naming cuts and grading animals; (6) inability of government to settle the nomadic herdsmen and (7) lack of funds and desire on the part of the local government staff currently managing the abattoir to improve meat processing in the country (Igene *et al.*, 1993; Alonge, 1991; Alaku and Igene, 1983; Agboola, 1979).

In Nigeria, indeed in many west and central regions of Africa, the Hausas as an ethnic group hold the monopoly of meat merchandising. They have over the years perfected a method of fabricating beef and have developed a nomenclature for the various cuts they fabricate. Considering a standardized carcass fabrication and nomenclature are pre-requisite for good merchandising and proper utilization of meat (Igene *et al.*, 1993; Anon, 1991; Judge *et al.*, 1989; Romans and Ziegler, 1977). It is unfortunate that such invaluable information has not been utilized in developing a viable meat industry in Nigeria. Infact, the recognition of the importance of standardization led the United States meat industry to adopt the uniform retail meat identity standards and to publish such references as the Meat Buyers Guide (NAMP, 1988; Romans and Ziegler, 1977).

The favourable supply of cattle in Nigeria coupled with the rapid expansion of human population in her urban centres and their increased demand for beef and other animal products (Igene and Alaku, 1984) should have

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FIGURE 1: LOCATIONS AND NOMENCLATURE OF NIGERIAN CUTS

Legend:

A—A and B—B. Position of split between the fore and hind quarters in Kano and Maiduguri respectively

1. maisayasaya	2a. wuyan awaza	2b. kafar awaza
3. toozo	4. kan allo	5. tuwon karfala
6. wutar gaba	7. maidanhadi	8. kwanduwa
9. mai yatsu	10. danzaaraaraa	11. takandar tanazzari
12. takandar mundamu	13. tsawayi	14. shabi
15. kafara	16. farin makaari	17. bishi
18. namijin naama	19. kundu	20 & 21 jijiya
		22. jeela

provided the incentive needed for establishing a modern meat industry. If Nigeria is to succeed in developing a viable meat industry, she must rely on her own resources and establish her standards.

The present study was undertaken to address the above mentioned challenges and provide information on the way beef is fabricated, merchandized and utilized in Nigeria with the ultimate objective of providing a basis upon which a viable meat industry could be built.

MATERIALS AND METHODS

Source of basic data

Data for the primal, subprimal, retail cut/parts and their nomenclature for the beef carcass and edible by-products were collected in Kano and Maiduguri. The data were obtained through personal interviews with twenty five beef fabricators most of whom have over thirty five years experience in the business. Representatives of the abattoir butchers association and over two hundred meat retailers and processors were also interviewed to determine the utilization of meat cuts for some of the locally processed meat products. A cross-section of consumers were also interviewed to test their knowledge of the meat cuts. The data in Kano were collected over a period of years by one of the authors who worked in Kano abattoir for about eighteen years and that of Maiduguri was collected over the period of 1992/1993.

The data were gathered by observing the fabrication of different carcasses of cattle normally slaughtered at the Kano and Maiduguri abattoirs. The cattle breed mostly

slaughtered in Kano are the White Fulani, Red Bororo, Sokoto Gudali and Kuri; the ones at Maiduguri are the Kuri, Wadara (Mbala), Red Bororo (Aborawa) White Fulani, Jalli (cross between Red Bororo and White Fulani), Yan kasa or the Shuwa Arab and the Rahaji in the order of slaughter volume. Data obtained from Maiduguri abattoir indicated that 38,922 heads of cattle from different breeds were slaughtered in the abattoir in 1992.

Location of cuts and preparation of carcass for fabrication

Data on the locations of various cuts used as sketched in figure 1 was obtained by the repeated observations and questioning of experienced fabricators at work. The preparation of carcass for fabrication begins with the slaughter of animals. In both Kano and Maiduguri, slaughtering of animals is done according to Islamic law. The proper slaughtering of animals in accordance to Islamic law was outlined by Chaudry (1992) include: (1) the animal must be of a halai specie; (2) the animal must be slaughtered by a muslim of proper age; (3) the name of Allah must be pronounced at the time of slaughter and (4) the slaughter must be done by cutting the throat of the animal in a manner that induces rapid, complete bleeding and results in the quickest death. No stunning of the animals is carried out and the animals are slaughtered and bled on the kill floor. After slaughter, the dead animal is skinned, eviscerated and the carcass is then hoisted, split into sides and ribbed.

Nigerian and United States cuts.

In order to determine the different United States retail cuts obtainable from the Nigerian cuts, figure 1 was compared to figures found in Anon

(1991), Judge *et al.*, (1989) and NAMP (1988).

Major muscles in Nigerian cuts.

The anatomical terms of some of the major muscles found in the various Nigerian cuts and edible portion of the viscera were established by reference to deLahunta and Habel (1986), Getty (1975) and an English-Hausa Dictionary of Veterinary Technical terms published by the Northern Nigerian Printer Kaduna (not dated).

Merchandising

The information on merchandising was obtained through personal interviews with the various persons involved with the meat business and through personal observations of the activities in the abattoir.

RESULTS AND DISCUSSION

Fabrication and nomenclature of cuts

Figure 1 shows the locations and nomenclature

a side of beef is ribbed (split into fore and hind quarters) at a point between the thoracic (13th) and the lumbar (1st.) vertebrae (A—A) and at the end of the lumbar (6th.) vertebrae (B—B) in Kano and Maiduguri abattoirs, respectively. The forequarter is referred to as *gaba* and the hindquarter as *cinya*. From one fore and hindquarter about twelve and fourteen cuts and ten and eight cuts are fabricated in Kano and Maiduguri respectively. On the whole, a total of twenty two cuts may be fabricated from one side of a carcass. Our investigations revealed that the steps involved in the fabrication of the different cuts may vary from one fabricator to the other. In general however, the steps involved in the cutting of a fore quarter include: (1) removal of *saawa* (membranes covering some of the muscles); (2) removal of *karfata* (the forelimb or chuck); (3) cutting out of *kafar* and *wuyar awaza* (the brisket and neck

TABLE 1: MAJOR MUSCLES IN THE NIGERIAN CUTS

Nigerian cut	Major muscle
<i>matsayasaya</i>	<i>Sternomandibularis</i>
<i>wuyar awaza</i>	<i>Neck muscles</i>
<i>kafar awaza</i>	<i>Pectoral muscles</i>
<i>kan allo</i>	<i>Infraspinatus</i>
<i>tuwon karfata</i>	<i>Supraspinatus</i>
<i>wutar gaba</i>	<i>Biceps brachii</i>
<i>maidanhadi</i>	<i>Triceps brachii (lateral head)</i>
<i>kwanduwa, mai yatsu</i>	<i>Extensors, Flexors</i>
<i>danzaaraaraa</i>	<i>Triceps brachii (long head)</i>
<i>takandar tanazzari</i>	<i>Longissimus lumborum</i>
<i>tsawayi, shabi</i>	<i>Latissimus dorsi,</i>
	<i>Obliquus externus abdominis</i>
	<i>Intercostals, Rectus abdominis</i>
<i>Katara</i>	<i>M. tensor fasciae latae</i>
	<i>Gluteals</i>
<i>Farin makaari</i>	<i>M. gluteus accessorius</i>
<i>bishi</i>	<i>Semitendinosus, Semimembranosus</i>
	<i>Biceps femoris</i>
<i>namiji naama</i>	<i>Quadriceps</i>
<i>kundu</i>	<i>Vestus lateralis</i>
<i>jijiya</i>	<i>Extensors, Flexors</i>

of Nigeria's primal, subprimal retail and some inferior cuts/parts and Table 1 gives the names of the major muscles that correspond to the cuts indicated in Figure 1. As indicated in Figure 1,

muscles) and (4) cutting of *takandar tanazzari* and *tankandar mundamu* (the loin) and *tooze* (hump). The hindquarter is fabricated in these steps: Removal of (1) *saawa*, (2) *jijiya* (3)

TABLE 2: NIGERIAN AND UNITED STATES CUTS

Nigerian cuts	United States cuts
<i>Tekandar tanazzari</i> <i>takakandar mundamu</i>	<i>Rib eye steak, Rib roast</i> <i>Top loin steak (boneless)</i> <i>Tenderloin steak, T-bone steak</i> <i>Potterhouse steak</i>
<i>katara, farin makaari</i>	<i>Sirloin and Top sirloin steaks</i> <i>Round bone</i>
<i>bishi, kundu, namijin naama</i>	<i>Tip, Top round and Bottom round steaks,</i> <i>Eye of the round,</i> <i>Bottom round roast</i>
<i>kan allo, tuwon karfata</i> <i>(top part)</i>	<i>Top blade steak (boneless),</i> <i>Mock tender, Chuck eye,</i> <i>Blade, 7-bone pot roasts</i>
<i>tuwon karfata (lower part)</i> <i>Mutar gaba, Danzaaraaraa</i> <i>kwanduwa, kafar awaza,</i> <i>tsawayi, shabi</i>	<i>Shoulder pot, Arm pot and Cross rib pot roasts,</i> <i>Brisket whole, Shank cross cut,</i> <i>Beef fore shank</i>

matsuki (pelvic bone), (4) *bishi*, (5) *kundu*, (6) *katara* and *farin makaari* and (7) *namijin naama*. A total of six persons are involved in the processing of a single animal in both the abattoirs studied.

Some variations exist in the nomenclature of some of the cuts. For instance *farin makaari* and *namijin naama* are also referred to as *kiifin naama* and *kusanya*, respectively. Certain terminologies exist to describe aspects of the cuts. The term *cikin* is used to refer to the hidden part of a cut on the carcass (e.g. *cikin kerfats*). Other terms are *wuyan* (neck of) and *kafar* (distal) as applied to *katara* (*gindin katara*) as the use of *tuwon* to refer to the thicker or more fleshy part of a cut.

Table 2 compares some of the retail cuts found in United States to the cuts fabricated in Nigeria. It was observed that there is no single United States cut that compares exactly to any of the Nigerian ones. Some few food Service cuts as reported in NAMP (1988) came close to comparing with the Nigerian cuts but were nonetheless different. The difference between the cuts in both Nigeria and United States is accentuated by the fact that in Nigeria the principles of separating tender portions from less tender ones and of lean areas from portions with greater amounts of fat as obtained in United States (Anon, 1991) is not emphasised. Similarity exists however, between the two countries in the principle of separating thicker and more heavily muscled portion of carcass from the thin muscled areas. Based on the findings of this study, the

Nigerian meat cuts appear different from that of United States. Similar observation was made by Alonge (1991) who reported that the Nigerian meat and poultry industry is peculiar and not comparable to the western system of meat fabrication.

Edible offals fabrication

TABLE 3: EDIBLE OFFAL MERCHANDISED IN NIGERIA

SN	Nigerian nomenclature	English equivalent
1.	<i>tumbi</i>	Rumen
2.	<i>tubura</i>	Omasum
3.	<i>kilaga</i>	Abomasum
4.	<i>huhu</i>	Lungs
5.	<i>hanta</i>	Liver
6.	<i>hanji</i>	Small Intestine
7.	<i>mazawuri</i>	Large Intestine
8.	<i>koda</i>	Kidney
9.	<i>saija</i>	Spleen
10.	<i>zucciya</i>	Heart
11.	<i>yaashi</i>	Mesentery
12.	<i>man cikii</i>	Omentum
13.	<i>man koda</i>	Suet (Kidney fat)
14.	<i>kai</i>	Head
15.	<i>kwanya, kwakolwa</i>	Brain
16.	<i>mukamukai</i>	Cheek meat
17.	<i>harshe</i>	Tongue
18.	<i>gwaiwa</i>	Testes
19.	<i>maama</i>	Udder
20.	<i>kafa</i>	Feet
21.	<i>paata</i>	Skin
22.	<i>kashi</i>	Bones

SN = Serial number

BEEF FABBRICATION, MERCHANDISING AND UTILIZATION IN NIGERIA

TABLE 4: WHOLESALE, SEMI-WHOLESALE, RETAIL AND INFERIOR RETAIL CUTS FROM BEEF MERCHANDISED IN NIGERIA

Wholesale	Semi-wholesale	Retail	Inferior retail
<i>Kai da Kafafu</i> (Head and Feet)	<i>Kai ko Kafafu</i> (head or feet)	<i>Harshe</i> <i>Mukamuki Kafa</i>	<i>Kwanya</i>
<i>Gaba</i> (forequarter)	<i>Karfata</i> <i>T. Tanazzari</i> <i>Toozo</i>	<i>Tween karfata</i> <i>Kan allo</i> <i>Mai baragwazai</i> <i>Tanazzari</i> <i>Toozo</i> <i>Wuyan Awaza</i> <i>Kafar Awaza</i>	<i>Maisayasaya</i> <i>Shabi</i> <i>Danzaaraaraa</i> <i>Maidanhadi</i> <i>Saawa</i> <i>Maikasheekara</i> <i>Matsafiyo</i> <i>Tsawayi</i> <i>Tantauri</i>
<i>Cinya</i> (hindquarter)	<i>Bishi</i> <i>Katara</i> <i>T. Mundamu</i> <i>Kundu</i>	<i>Banten bishi</i> <i>Wargajin bishi</i> <i>Katara</i> <i>Mundamu</i> <i>Kundu</i>	<i>Jijiya</i> <i>Kwanduwa</i> <i>Mara yatsu</i>
<i>Kayam Ciki</i> (Viscera)	<i>Tumbi</i> <i>Tubura</i> <i>Zuciya</i> <i>Hanta</i>	<i>Tumbi</i> <i>Tubura</i> <i>Kilaga</i> <i>Hanta</i> <i>Mazawuri</i> <i>Hanji</i> <i>Kooda</i> <i>Zuciya</i>	<i>Man Kooda</i> <i>Man Ciki</i> <i>Yaashi</i> <i>Huuu</i> <i>Saifa</i> <i>Kashi</i>

T. = Takandar, for other descriptions refer to tables 1 and 3

*Names are given in Hausa

The edible offals consumed in Nigeria and their nomenclature are listed in Table 3. The list shows that virtually all parts of an animal is edible in Nigeria. No special fabrication is involved in separating parts of the viscera, but the head and feet are processed in a unique way before merchandising. The processing may include the removal of the cheek meat, tongue and the brains from the head and the burning of hair off the skin covering the head and the feet.

Beef and edible offal merchandising

Table 4, shows the wholesale, semi-wholesale, retail and inferior cuts/parts from beef and edible offals merchandised in Nigeria. The wholesale parts are four including, the head and

feet together, forequarter, hindquarter and the viscera. The bigger cuts/parts from the wholesale cuts constituted the semi-wholesale cuts. The distinction between the semi-wholesale and retail cuts is not always very clear. The difference to note between the two cuts is that the retail parts/cuts may be constituted of bones with very little meat (intercostal) attached. Examples of such cuts are *mai baragwazai* (literally the one with marrow but actually representing the proximal and distal part of the humerus), *tanazzari* (thoracic bones) and *mundamu* (lumbar bones). The semi-wholesale and retail cuts/part of the head and feet wholesale class may be constituted of just one item out of the total or part of one of the items (the feet or a single foot). The distinction between the sale cut was

TABLE 5: BEEF AND EDIBLE OFFAL UTILIZATION IN KANO AND MAIDUGURI

Meat product/dish	Product/dish description	Preferred cuts	Comments
<i>Tsire</i>	Spiced, roasted staked meat	<i>Kundu, Bishi</i> <i>Katara, Hanta Tumbi</i>	Less connective tissues and fat, thick muscles
<i>Kilishi</i>	Thinly sliced, sun dried spiced and minimally roasted meat pieces	<i>Farin makaari</i> <i>Bishi Katara</i>	Thick muscles, easy to slice, less connective tissues
<i>Balangu</i>	Roasted large slices of meat with or without spices	<i>Kundu, Shabi</i> <i>Namijin naama</i> <i>T. Tanazzari,</i> <i>T. Mundamu</i> <i>Tumbi, Hanta</i>	The size of the muscles makes them suitable
<i>Dagedege</i>	Oily stew without vegetables	<i>Katara, Kundu</i> <i>Toozo</i>	The cuts are tender enough
<i>Taushe</i>	Vegetable soup	<i>Makasheekara</i> <i>Maibargwazai</i> <i>Wargajin Bishi</i> <i>Gindin Katara</i> <i>Jeela, Harshe</i> <i>Mundamu, Tanazzari</i>	The intercostal meat particularly the bones gives the soup its appeal
<i>Gashi</i>	Home barbecued meat	<i>T. Mundamu</i> <i>T. Tanazzari</i> <i>Toozo</i>	The marbling and tenderness of the cuts are desirable
<i>Banda</i>	Smoked meat	<i>Karfata</i> and meat trimmings in general	Any unsold or nearly spoiled meat is used
<i>Ganda/Kpomo</i>	Spicy soup	<i>Kafa, Paata Kai</i>	The bone marrow and gelatinized skin gives this dish its appeal
<i>Perpesu</i>	Pepper soup	<i>Kayan Cikii(Viscera),</i> <i>Kai, Kafafu</i>	Same reasons as for Ganda

T. = Takandar, for other descriptions refer to Tables 1 and 3.

less pronounced when merchandising of the viscera is considered. In this category any organ may singly constitute a semi-wholesale or retail cut/part. The inferior cuts/parts are mostly composed of thin meat (e.g. *shabi*, *tsawayi* and *maisayasaya*), portions with lots of connective tissues (e.g. *maidanhadi*, *jijiya*, *kwanduwa*, *marayatsu* and *danzaaraaraa*), those associated with big tendons (e.g. *maikasheekara*, and *tantauro*) and trimmings of membranes with very little meat attached (*saawa*). Merchandising of wholesale cuts are principally carried out at the abattoir where they are at times fabricated before being transported to the butchers shop. Different groups of buyers including butchers/retailers,

processors of various traditional Nigerian meat products, proprietors of hotels, restaurants and *bukkas* (eating shacks) and consumers go to the abattoirs to buy meat. Buying and selling at the abattoir are done on the basis of visual appraisal and haggling rather than on the weight of the cuts. Outside the abattoir, most butchers in Kano and Maiduguri retail their meat on weight basis. As at present a kilogram of meat cost about One hundred and eighty naira which is equivalent to \$2.0 at the official exchange rate. At the butchers shop, no consideration is given to the eating quality of the cut when merchandising, all cuts including liver, heart and kidney attract the same price per kilogram.

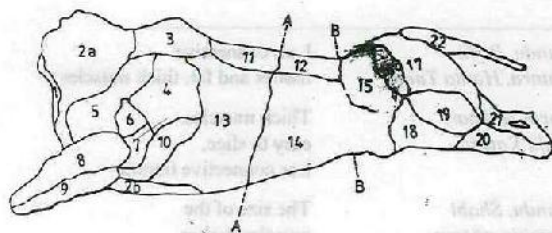


Figure 2

Different groups of retailers specialize in buying and retailing different parts of the wholesale, semi-wholesale and retail cuts or offals. Some may buy and retail only the liver while others may only deal in heads or legs. As a result of lack of storage facilities prices of meat in many butchers shop/stand may vary with the time of the day. Because of demand too, certain portions/parts, example oxtail or tail and feet, now attract premium prices. With the exception of some few supermarkets and chain stores, meat in Maiduguri and Kano is sold unpackaged, it may be wrapped with paper on purchase. The way meat is merchandised in Nigeria when compared to the advanced countries in the West leaves much to be desired.

Beef and edible offal utilization

Utilization of beef and edible offal for the various meat products/dishes produced in Kano and Maiduguri are summarized in Table 5. Although this work was conducted in Kano and Maiduguri, the results apply to most of the northern parts of Nigeria and where ever *Tsire*, *Kilishi*, *Balangu* and *Banda* are produced. Generally, the choice of a cut to use is dependent on the product/dish to be processed. The choice of the offal to use is determined by consumer acceptability and tradition as was observed in other parts of the world (Goldstrand, 1988). For instance *kilishi* makers prefer the thick cuts with less connective tissue. The reason is that in *kilishi* making, the slicing should result in very thin (.17cm) and long (45cm) continuous slices (Igene et al., 1990). For

the reasons given, thin cuts or cuts with lots of connective tissues may not give the desired slices. In the case of soups, such as *taushe* (vegetable soup), the cuts containing bones are preferred. The reason to incorporate the bones is that, the bone marrow gives the soup its appeal, also people derive lots of pleasure from sucking and gnawing on the bones at the end of a meal. Women in particular like to discuss the events of the day at length especially when bones are plentiful in a soup. For very spicy soups, such as *ganda/kpompo* and *peppersoup* which have both medicinal (normally given to women after delivery, boys after circumcision and persons with a cold or flu) as well as social (served in drinking parlours) purposes, offals give the desired flavour, psychological satisfaction and the mouth feel characterised by such dishes. The fact that some cuts are used for such premium products as *kilishi*, which presumably yield higher profit to its producers, suggest the need why differential pricing should be introduced for various cuts. As soon as the consumer is educated on the quality of the different cuts, it may not be long before they begin to pay different prices for these cuts as opposed to the flat rate they are being charged now.

Identification of cuts/parts and the use of nomenclature

The interviews and discussion conducted in this study with those involved with the different facets of the meat industry, particularly fabricators, processors and retailers, suggest that, most of them could identify the traditional cuts fabricated locally. They are also familiar with the nomenclature used for these cuts. Most consumers do not easily identify these cuts and are not familiar with the nomenclature. There is therefore the need to educate the consumer on the various cuts so that they could easily recognize them on the basis of their nomenclature rather than relying on sight alone. The application of the findings in the present study would be a right step in this direction.

SUMMARY AND CONCLUSION

The beef industry in Nigeria remains in its infancy as a result of several factors. One of which the failure of the industry to develop standards and nomenclature for its cuts. This study found that

fairly standardized meat cuts and nomenclature already exist in Nigeria, albeit not properly employed. The study also found that, (1) majority of butchers are familiar with the existing cuts and use them frequently, (2) most consumers are largely ignorant of these cuts and rely mostly on personal judgments in their purchase of meat, (3) not much consideration was given to the eating quality of the cuts in merchandising, (4) the cuts are used distinctively for certain processed products/dishes and (5) differential pricing of cuts may be accepted because it is already practiced to a limited extent. It is the conclusion of this study that given the favourable situation of Northern Nigeria in terms of cattle population and the losses associated with transporting animals to the southern part of the country (Igene and Alaku, 1984, Alaku and Igene, 1983) coupled with the already existing carcass fabrication methods, a viable meat industry could be supported in the Northern part of Nigeria. However, for such an ideal to be achieved, more work needs to be done in the following, (1) further standardizing the cuts and their nomenclature, (2) studying the compositional differences of these cuts, (3) establishing quality grades for these cuts, (4) devising specific methods of preserving and packaging these cuts, (5) studying the different breeds of local cattle in terms of their yields of these cuts, (6) devising ways of improving these cuts and (7) collating the various information that is going to be generated for use in the establishment of the industry and in educating consumers and administrators.

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