

Consumption and Production Survey of Thin Chicken Sausages in Benin

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ABSTRACT

The work aims to carry out a survey on the production and consumption of sausage in Benin. In addition, the sausage constitutes a source of protein and the surveys were carried out in the various communes of Benin, on the basis of a reasonable sample of 120 consumers and food sellers in each department of Benin. These surveys relate to the production of chicken sausage which is done according to the different stages which are the pre-treatment of raw materials, boning, trimming, chopping, cutting, embossing, draining, drying and sterilization. These results showed that the majority of consumers surveyed use Minu and Morifresh brand sausages to accompany meals rich in protein. The results also showed that the different types of sausages are used to accompany several culinary dishes in Benin.

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Introduction

For millennia, the primary concern of humans was to find and store food. Meat is a staple food in the world, because it is an important source of nutrients and because of its emotional tone, it is the food par excellence whose consumption is hampered only by price. Demand for meat is expected to increase by 200 million tonnes between 2010 and 2050, virtually doubling the volumes currently produced. (FAO, 2010). Meat processing results essentially from the concern to obtain from fresh meats, sausages and sausages which are the most appreciated and reputable deli products among consumers. They consist of a casing (of intestinal or synthetic origin, shaped like a tube and closed at the ends) filled with seasoned ground meat and are therefore ready-to-eat foods.

In addition, in the current context of development, consumers are looking for fast, healthy and nutritional foods; consumables directly after a short cooking time. This therefore supposes the purchase of finished products, without preliminary preparations before consumption (RAKOTOVAS RAVAHATRA, 2003).

Benin is a country in West Africa whose population was estimated in 2013 at 10,008,749 inhabitants (INSAE, 2015) over an area of 112,620 km². Its economy is dominated by the agricultural sector which represented, in 2016, 26% of the Gross Domestic Product (GDP) (The World Bank, 2016). The meat sector has restructured in recent years and there are processing industries of the charcuterie type specializing in the production of fine sausage and merguez. As a result, broilers have experienced an improvement in productivity thanks to the concomitant advances in husbandry methods, nutrition and veterinary medicine.

It is therefore urgent to investigate the production and marketing of sausages in Benin

1. Materials and methods

1.1. Materials

1.1.1. Animal material

These are locally produced sausages and sausages imported into Benin under hygienic conditions.

1.1.2. Survey material

The investigation material consists of an investigation sheet designed for this purpose.

1.2. METHODS

1.2.1. Surveys

The sausage consumption and production survey is carried out in the departments of Atlantique-Littoral (Cotonou, Abomey-Calavi), Ouémé (Porto-Novo, Dangbo), Mono (Lokossa, Comè), Borgou- Atacora (Parakou, Natitingou) and the Hills (Savalou, Dassa). The "snowball" technique is used in this study, which involves interviewing sausage consumers. To ensure the regional diversity of our sample, we scanned the cities, targeting neighborhoods known to group together certain ethnic groups from particular regions. To complete the sampling according to the needs of the survey, door-to-door visits were carried out in some remote neighborhoods.

1.2.2. Results analysis

A statistical study was carried out in order to highlight the different consumption rates of imported and local sausages using the STATA 2016 EXCEL software.

2. Results and Discussion

2.1. Results

In Table I are presented the results of the availability of sausages by department.

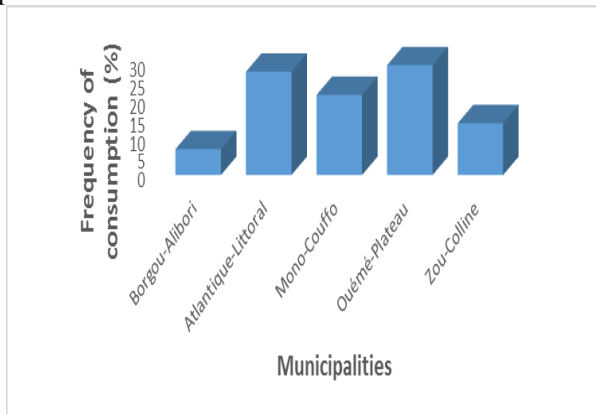
Table 1 . Availability of sausages by department.

Departments	Brands of sausage consumed
Atlantique- Littoral	Minu, Amadori, Kika, Morifresh et Tilou
Ouémé	Minu, Amadori, Morifresh et Kika
Mono	Minu et Morifresh
Collines	Minu et Morifresh
Borgou-Atacora	Minu, Morifresh et Kika

These results showed that the consumption of different brands of sausages varies according to each department and its availability.

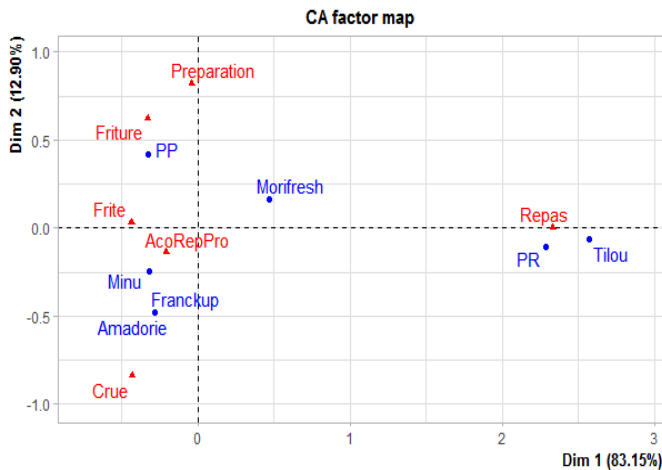
2.1.1. Average frequency of consumption

The frequency of sausage consumption by municipality has been presented in figure 1. The analysis of this figure has shown that the departments of Ouémé appear with the highest rate of 29.62% followed by the Atlantique-Littoral. (27.87%) and Mono (21.60%). The departments of Collines for their part presented a rate of 13.94% and those of Borgou-Atacora appear last with the lowest rate of 6.97%.

**Figure 1. Frequency of consumption by department.**

2.1.2. Relationship between type of sausage and its uses

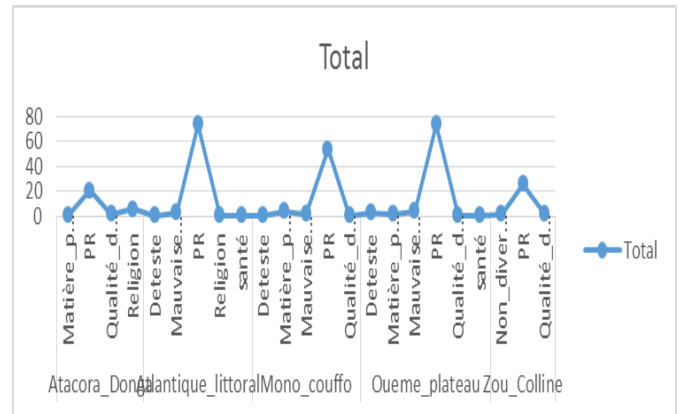
The relationship between the types of sausages and their uses especially in the culinary environment is shown in figure 2.

**Figure 2. Relationship between types of sausages and their uses in the culinary environment.**

The results showed that there is a good correlation between the use of sausages and the preparation, we notice that Minu and Morifresh are used to make spaghetti, couscous, fatty rice, cassoulet, omelets and other dishes. The same observation was made for Tilou, Amadorie and Francup with a few variations of dishes, namely kebabs and hors d'oeuvres.

2.1.3. Problems related to sausage consumption in Benin

The different problems associated with the consumption of sausage in Benin are shown in figure 3.

**Figure 3. Problems related to sausage consumption in Benin.**

The survey results showed that the majority of problems linked to sausage consumption in the departments surveyed revolve around the raw materials used, which remains unknown by most of the respondents, which creates doubts about the quality of the latter. It should also be noted that some respondents more specifically in the departments of Borgou-Atacora and Atlantique-Littoral mentioned causes related to religion and health.

2.1.4. Storage methods for different types of sausages

In Table II, the results of the different sausage preservation methods are presented.

Table 2 . Storage methods for sausages.

Conservation methods	Number	Frequency
Outdoors	5	1,74%
Fresh	77	26,83 %
Frying	1	0,35%
Smoking	5	1,74 %
PR	199	69,34%

From the analysis of the results it emerges that 26.83% kept the sausages in a cool place (in the refrigerator) while 69.34% did not keep them but preferred to consume them directly after purchase or to make other culinary dishes with these last. We note that less than 2% kept the sausages in the open air and the others preferred to keep them in the frying or to carry out the smoking. It can be deduced from this that the different preservation methods are aimed at preventing the deterioration of sausages. The best preservation method used by the respondents is cold preservation, the purpose of which is to inhibit the development of microorganisms liable to destroy the quality of the different sausages studied.

2.2. Discussion

The results showed that the consumption of the sausages studied varied according to the availability (Table I). Availability is the first pillar of food security. A country's food supply usually comes from domestic production and imports and sometimes from stocks (INSAE, 2019). In Benin, the food energy availability content is 75% provided by meat (INSAE, 2019).

Moreover, despite the fact that sausages are very well known, appreciated and consumed in Benin, they are very little consumed in our various municipalities (Figure 1). According to Dognon et al. (2018) to make up the deficit and ensure food security for the population, especially with regard to animal proteins, Benin imports meat products on a massive scale. To reverse this trend, Benin should make great efforts in the field of animal production. The results also showed that the majority of consumers use Minu and Morifresh to accompany meals rich in protein, making fries or even deep-frying. In addition, those who have no preferences

(eat all types of sausages) prefer to use it in various dishes, eat it raw and others. Same remark at the level of Tilou, Franckup and Amadorie used in low proportion (Figure 2).

The results also showed that the different types of sausages are used to accompany many dishes and are also essential in culinary experiences as well as eating habits.

Conclusion

The present study carried out on the consumption and marketing of sausages in Benin showed that the sausage most consumed is a thin-paste chicken sausage imported from the Minuano brand from Brazil. VETAGRO SA is the only company in Benin that produces cooked thin-paste chicken sausage and fresh Merguez-type sausage in an industrial manner. The other companies produce simple fresh sausages made from chicken or beef. The survey results showed that sausage is consumed more in Ouémé followed by Atlantique-Littoral (27.87%) and less consumed in North Benin, in Borgou-Atacora (6.97%). The different sausages investigated

are used for several purposes (preparation of rice, spaghetti, hot dogs, barbecue, couscous appetizers, etc.).

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