

Formulation, preparation, and sensory evaluation of meat hamburger from culling goats with different fat contents

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ABSTRACT

The main objective of this work is to develop and evaluate hamburger source sensorially using goat meat from discarding animals with different levels of pig fat. Meat from discarded goats from adult animals without distinction of breed, obtained from the integral bone of the whole carcass, was cut into small blocks and ground together with pork bacon (in the proportion of 10%, 15% and 20% of the meat mass) in 6 mm discs. Meat, fat and other ingredients were placed in a mixer and molded in hamburger form and frozen in a freezer at -18°C . The burger was served after roasted in margarine, such as commercial hamburger, cubed on its side. 1,5 cm The intention of purchase and frequency of consumption were analyzed, in addition to the opinion about the color, odor, texture and flavor of the product. According to the results, it can be said that the F3 of the goat hamburger was better evaluated by the judges, both for the sensory properties and for the intention of purchases. The good acceptability and purchase intention of 74.5 % of the tasters confirm the technological potential of meat from discarding goats. This result is due to the greater softness and juiciness due to the presence of satisfactory fat in the formulation. As the discard meat is a low cost raw material, the preparation of hamburgers allows a better use of them, diversification the products offered, adding value to the product and contributes to the improvement of income of producers and consequent development of agribusiness.

Keywords: global acceptance; sensory value; discard meat burger

1 INTRODUCTION

According to Melo *et al.* (2020), the absence of the consumption of goat meat is mainly due to the lack of appreciation of meat and the difficulty in finding to buy. The consumption of goat meat is restricted due to factors that involve from the production chain, price, availability of supply and also to the qualitative aspects of it (Madruga, 2004). On these stands out the meat of old goats or discards, without ideal conditions for in natura consumption, mainly due to the lack of standardization of carcasses and inadequate hygienic and sanitary conditions of slaughters, which may harm the commercialization. The processing of goat meat

is a native alter to add value to the raw material, offer more options for its commercialization, contribute to generate jobs and increase the supply of commercially available products (Madruga, 1999). The use of this meat in the form of hamburgers could be an alternative for a better use of it.

The hamburger has high consumption preference, especially in the *fast food chain*, and is a viable alternative for the elaboration of a new caprine meat product. The commercial value of the meat is based on its degree of acceptability by consumers, which is directly correlated with the palatability parameters of the product. The characteristics of the meat that contribute to the " palatability " are those pleasing to the eyes, nose and taste, among which the noleptic aspects of flavor and succulence are. Both properties can be influenced by several factors, which exert a strong influence on the quality and quantity of fats. In meat products, fat is essential to flavor and texture, so its reduction can affect the acceptability of product (Mittal and Barbut, 1994).

In recent years the interest in goat meat has grown, also due to its nutritional properties, because it has low levels of cholesterol, saturated fat and calories, when compared with the other meats (Sobrinho and Neto, 2001). However, goat meat has a characteristic flavor and odor, which are accentuated in adult animals, being an unfavorable factor for its commercialization (Madruga, 2003). The main objective of this work is to elaborate and evaluate hamburgers of goat meat from discarding animals with different fat contents.

2 MATERIAL AND METHODS

The experiment was conducted in the MeatLaboratory of IFMA - Campus Codó. Meat from goats from adult SRD animals, obtained from the bone of the whole carcass and after the removal of excess connective tissue, clot sand superficial go ration, the meat was manually cut into cubes and ground together with swine bacon in discs 6 mm. The meat, fat and other ingredients were placed in a mixer and molded into a hamburger bow land frozen in a freezer at -18°C .

The burgers were evaluated by 100 untrained tasters, chosen because they liked and were regular consumers of hamburgers. The attributes color, aroma, flavor, texture and overall acceptance were evaluated using a hedonic scale of 9 points, ranging from one end to another since " I really, really disliked it" with a score equal to 1 to "I liked it very much", with a score equal to 9. In addition to the assignment of notes for each sample, the tasters answered about the intention to purchase the elaborated product. To evaluate the purchase intention, the 5-point scale was used, in which 1 represented the minima note " certainly not to buy it " and 5 represents the next note "certainly would buy", using the procedures described for sensory analysis.

The hamburger was served after frying on plate using margarine, such as commercial hamburger, cubed on its side 1,5 cm. Three types of goat meat ham were tested, where 10%, 15% and 20% of the initial value of the meat were tested respectively (Table 1).

Table 1 - Formulation of the meat burgers of discard goats

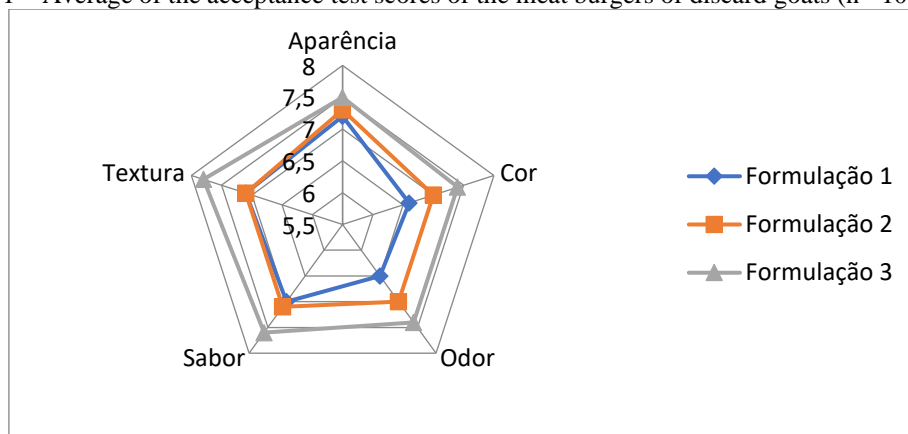
Formulation	I	II	III
Meat (g)	1000	1000	1000
Bacon (g)	10th	15th 0	2000
Salt (g)	10	10	1st 0
Ice (g)	10th	10th	10th
Garlic powder (g)	1	1	1
Onion dehydrated (g)	1	1	1
Nutmeg (g)	1	1	1
Monosodium glutamate (g)	1	1	1

3 RESULTS AND DISCUSSION

The function of ice is to absorb the additional heat caused by the action of the cutter, also assisting in the dissolution of the ingredients, lubricating the meat dough and reducing the cost of the product. If the mixture reaches a high temperature, the emulsion may break, causing the fat to be separated during this phase. The onion and dehydrated garlic, in addition to the flavor and aroma of the hamburger, also inside the enzymatic effect of bacteria. Monosodium glutamate enhances the natural flavor of meat, giving its characteristic flavor mainly those rich in protein.

The fat used in the emulsion is of good quality (good conservation, color, odor, flavor and consistency), because hard and old fats tend to produce grainy texture and unpleasant taste. Bacon contributes to avoid compaction of the mass, stimulating continuous evaporation, essential to a good maturation and aromatization of the product. Fat also helps in stability, softness, good appearance and also decreases the cost of the product. Figure 1 shows the means of the test results of preference of appearance, color, odor, flavor and texture for the meat burgers of discard goats.

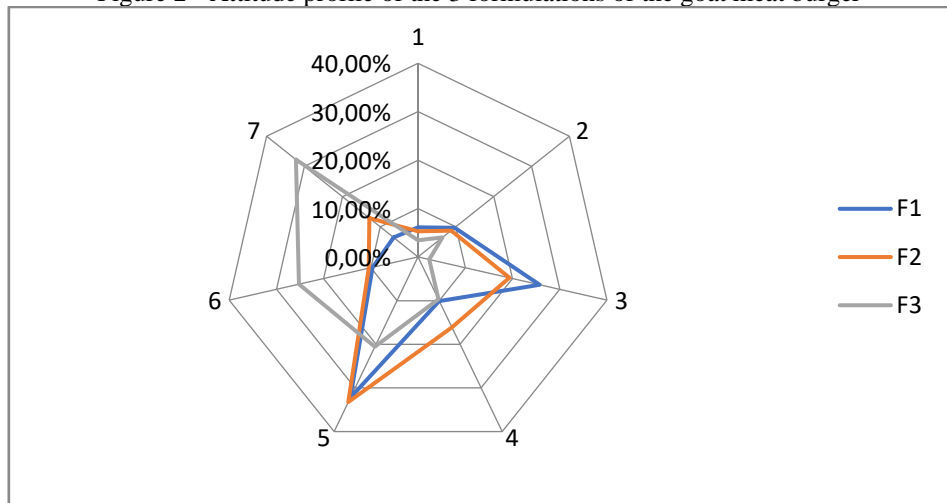
Figure 1 – Average of the acceptance test scores of the meat burgers of discard goats (n= 100 tasters)



Consumer choice is directly related to the sensory attributes of the products. F3 was considered the best sample for flavor, color, odor, appearance and texture followed by the samples of formula 2 and 1. The formulation with lower content of results fat in a product with hard texture, rubber texture. According to Metri *et al.* (2006), the lowest fat content is shrinkage. According to the tasters, the F3 has the soft, juicy texture and more attractive appearance. The meat of capri in the disposal has little acceptance in the in natura form, due to the characteristic flavor and odor and the little softness, but it is a great source of

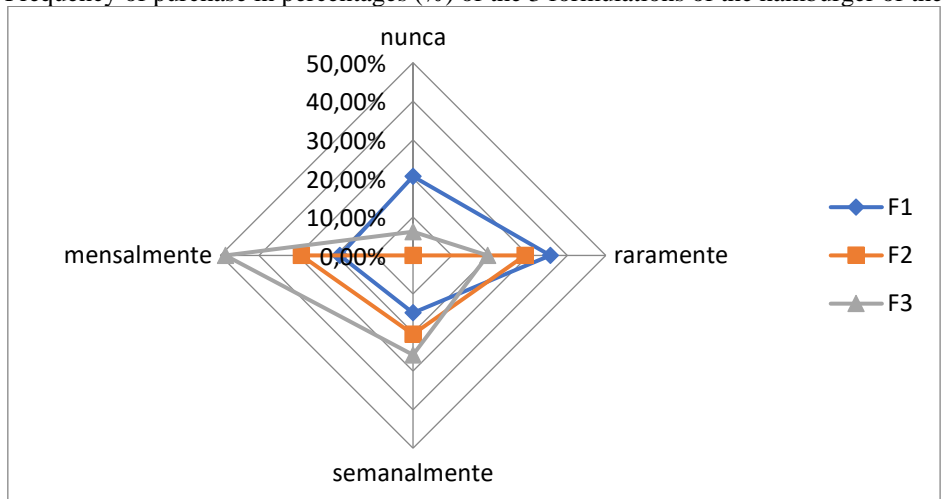
protein and adapts well to the meat processing in the form of hamburgers. Figure 2 represents the attitude profile of the 3 formulations of the goat meat burger. Fhi used a scale structured in seven points, where the judges attribute grade 1 – would never eat the product until note 7 – would always eat the product.

Figure 2 - Attitude profile of the 3 formulations of the goat meat burger



The index of eat ability for F3 was 87.67%, considering that the minimum acceptability index is 70% after F2 with 72.7%. As the preparation of the goat meat burger, there is no specific legislation. With the reference, the technical regulation of identity and quality of beef hamburger was used, this stabilizes a maximum of 23% fat (Brasil, 2000). Figure 3 represents the frequency of purchase of the 3 formulations of the goat meat burger

Figure 3 - Frequency of purchase in percentages (%) of the 3 formulations of the hamburger of the goat meat



By analyzing the results provided by the candidates, it was observed that F3 obtained a higher frequency of purchase with 74.50% of the preference of the judges; F2 with 49.48% of preference; and F1 with 33.90% acceptance. This result is coming from, probably from the greater softness and juiciness due to the presence of satisfactory fat in the formulation. As the discard meat is a low cost raw material, the preparation of hamburgers allows a better use of them, diversification the products offered, adding value to

the product and contributes to the improvement of income of producers and consequent development of agribusiness.

4 CONCLUSIONS

The hamburgers of goat meat of discard animals had a good acceptance by consumers, which was demonstrated by the profile of attitude of the judges and frequency of purchase and the formulation with 20% of fat was higher preference index. The preparation of the meat hamburgers of discard goats is an option for industrialists who want to fully take advantage of goat meat using cuts considered less noble, as cutouts resulting from the grounding in the manufacture of a new product seeking added value.

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