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Analysis of drying operation and quality evaluation of crushed meat prepared from three trims of low beef marketing

Summary

The objective of this research was to evaluate the performance and quality of three cuts of beef marketing low during the drying process for the preparation of meat crushes. quality (color, pH, aw, chemical composition) of beef cuts glove, neck and lizard cool and their behavior during drying (curves) and the quality of the finished product (color, pH, aw analyzed, chemical composition). Data were evaluated by analysis of variance via. Color and aw in the raw material were within the normal range, while the pH was varied from 5.92-6.45. In the chemical composition, the cut glove had higher moisture content (76.42%). Similarly, during drying, this cut, introduced least resistance for water removal, reaching the desired humidity (25-30%) in less time (240 min). With regard to the finished product, differences in physicochemical characteristics, mainly in color they were presented. The chemical composition, both moisture and protein were affected, which varied between the 24.65-28.09% and 51.70-53.65% respectively. The three cuts have assessed potential for the production of dried meat products, such as crushed and dried meat.

Keywords: beef cuts, dried, crushed meat, quality, chemical composition

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Introduction

Meat is a high-value food for human consumption because it is a good source of essential amino acids and the main source of B vitamins and minerals. Its distinctive flavor, makes it one of the favorite foods by consumers. However, its intrinsic characteristics as a high water activity, slightly acidic pH, carbohydrate availability (glycogen) and amino acids make it an ideal food for microbial growth.[1] There are different methods for preserving meat. However, drying is one of the most used since ancient times in combination with the salt, to obtain a product with reduced water activity, high nutrient content and does not require refrigeration.[2] In the northern traditional meat products obtained by drying, such as dried meat botanera dried meat type and type crushes are made. La Machaca beef is a product, which after drying meat, involves a process of crushing or shredded in specialized mill. At present, these products have great demand in the international market[3] and are made from different longissimus dorsi muscle as,[1] semimembranosus, psoas major, etc. , which have high marketing as fresh cuts[4]. However, there are muscles that have low marketing and linger on the shelves of major firms of meat, which may have potential for the development of these dry meat products.

Materials and methods

Feedstock and drying process

To do this research it was used as raw material from beef cuts three low marketing (gloves, neck and lizard), with an internal temperature of 5°C and provided by a local company, meat processing. Thereafter, these pieces were sliced (Tor-King RB-300) 7 mm thick and distributed in drying trays, so that the samples were not sobrepusieran. Then, salt (2.5% of initial weight) was added manually tending to be distributed evenly. Once distributed and salty meat, dehydrated in a dryer forced convection (NSF, D-20), varying the temperature of 60-90°C, to a moisture between 25 - 30% in the final product. Once the drying period is complete, the samples were cooled to room temperature,

Measuring pH, color and Aw

The pH and color measurement was performed both in fresh meat and meat mash. The pH evaluation was performed by mixing meat and distilled water in a 1: 9 in a beaker, then the mixture was stirred and the electrode potentiometer (HANNA model 211) was introduced previously calibrated. Color was measured on the surface of the sample with a colorimeter (CR-400 MINOLTA KONIKA, Japan). Color measurement included determination of values L*, a*, b*.[5] The water activity was determined as indicated by Rotronic equipment (HP23), where it was first calibrated with standardized solutions and then the sample was read manually.

Drying curves

Drying curves for each cut were made, taking into account the operating conditions of the process as the initial moisture of the raw material, temperature, relative humidity, air velocity and final product moisture, among others.[6] At the start of the initial weights for each cut taken and the weight loss was monitored during drying every 30 minutes for three cuts, until a final humidity of 25 - 30%. Similarly the increase in temperature was monitored throughout the process, until a maximum temperature of 90°C. Similarly, the results obtained with the yield of each cut was calculated.

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