EVALUATION OF SANITARY HYGIENIC CONDITIONS OF REFRIGERATORS IN THE MUNICIPALITY OF PARAIPABA-CE

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Abstract: The consumer increasingly associates quality food with safe food. Consequently, major brands publicize their products by emphasizing quality, always associating them with strict control of the

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production system. The objective of the present work was to evaluate the hygienic-sanitary conditions of refrigerators located in the municipality of Paraipaba (CE). This was a descriptive case study with quantitative approach conducted in three refrigerators in which it was coded as F 01, F 02 and F 03. To obtain the data, a Chec Klist list was used as resolution no. 216 of 2004, to evaluate the buildings, facilities, equipment, furniture and utensils and their hygiene, manipulators, raw materials and packaging, food preparation, storage and exposure to the consumption of prepared food. The results of fridge 01 showed a total percentage of 67.56% of conformities and 32.44% of nonconformities, refrigerator 02 presented 67.56% of conformities and 32.44% of nonconformities, refrigerator 03 presented 70.27% of conformities and 29.73% of nonconformities. In this way, the awareness and training of manipulators with guidance on basic health and hygiene and good practices in food manipulation is necessary.

Keywords: Good manufacturing practices; Food security; Consumer; Conservation.

Introduction

In recent decades, food has been a cause for concern, as many problems related to food quality have been highlighted. Two important aspects involving the food-health binomial are the nutritional content and the hygienic-sanitary control (COSTA et al., 2017). The emphasis on the attributes of quality and responsibility regarding the safety of food has been growing significantly in the world market, as the risk to the product offered directly affects the consumer and this implies a search for safe food (BUAINAIN; SPERS, 2010).

Data from the notifiable diseases information system (SINAN) indicate that there were 12,660 outbreaks of ATD in Brazil in the period from 2000 to 2017, of which 239,164 were the total number of patients with a record of 186 deaths, the Southeast was the region of Brazil with the highest distribution of outbreaks with 39.1%, followed by the South with 33.7%, the Northeast with 16.2%, the Midwest with 6.0% and the North with 5.0%. Pointing to a prevalence of outbreaks in homes of 36.5%, restaurants and bakeries with 15.4%, and mixed foods (pizzas, risotto, meat in

sauce) as the main vehicle for transmission of microorganisms equivalent to 11.37%. Ten transmitters of microorganisms were identified, however, Salmonella predominates with 35%, presenting the main etiological agent from the year 2000 to 2017 in the country (BRASIL, 2017).

The epidemiological profile of DTAS in Brazil is not popular, as few cases of diseases involving food contamination are reported to inspection agencies and health agencies. And because the true causes are not known, it is difficult to understand the subject, thus making many of the resources used for the implementation of solutions flawed (BATISTA; BEZERRA, 2015).

To ensure the presence of safe food, it is necessary to carry out a complete assessment of its risks through good manufacturing practices (GMP), which encompass a set of processes in the food production chain, ranging from the acquisition, handling, storage, preparation and preservation of the same prepared and ready for consumption (FORTUNATO; VICENZI, 2014).

According to Costa et al. (2017), meat belongs to the class of perishable products, and gains a prominent role when it comes to hygienic-sanitary control. This control involves stages ranging from slaughter to the commercialization of the final product, as it is a food of excellent nutritional quality due to the proteins of high biological value present in its composition, in addition to other nutrients essential to the body, but which provide, on the other hand, the ideal environment for the development of microorganisms.

The export meatpacking industry is going through a series of transformations, both to achieve acceptability in the world market and to become competitive. Having changes in sanitary hygienic control, adaptations to certification standards of the International Organization for Standardization (ISO) Integrated Management Systems – GIS, preparation of Good Manufacturing Practices Plans (GMP) and Hazard Analysis and Critical Control Points (HACCP), as well as actions that promote animal welfare. In general, the national slaughterhouses still point to a low level of qualification, a condition that is changing with the advance of exports (MIRANDA, 2001).

Exposure of meat in environments where packaging conditions are inadequate can cause an excessive multiplication of bacteria. When this meat is exposed, it arrives at the consumer with a

high microbial load, with the possibility of pathogenic microorganisms, associated with foodborne diseases. It should be taken into account that in small municipalities there are still points of sale that are not regularized and/or qualified to sell these products. In this context, this study aimed to evaluate the hygienic-sanitary conditions of slaughterhouses in the municipality of Paraipaba-CE.

Materials and Methods

The survey was carried out between June and July 2018, in the municipality of Paraipaba-CE, located in the metropolitan region of Fortaleza. Three slaughterhouses were evaluated, with the focus of the research being the evaluation of their hygienic and sanitary situation.

For the situational diagnosis of these environments, an inspection script known as a checklist was used to verify conformities and non-conformities. This verification instrument was based on RDC No. 216/2004, which provides for the technical regulation of good food service practices (BRASIL, 2004). The questionnaire was adapted to pay attention to the hygienic-sanitary aspects of refrigerated establishments, this list contains 37 verification items, grouped by subject into seven blocks: as well as building, facilities, equipment, furniture and utensils; cleaning of facilities, equipment, furniture and utensils; Handlers; raw materials and packaging; food preparation; storage; exposure of the prepared food for consumption.

For each item there were three possible answers, such as yes for conforming items, no for non-conforming items and no applies to items that do not apply. The items, whose answer was “not applicable”, were not evaluated as a percentage

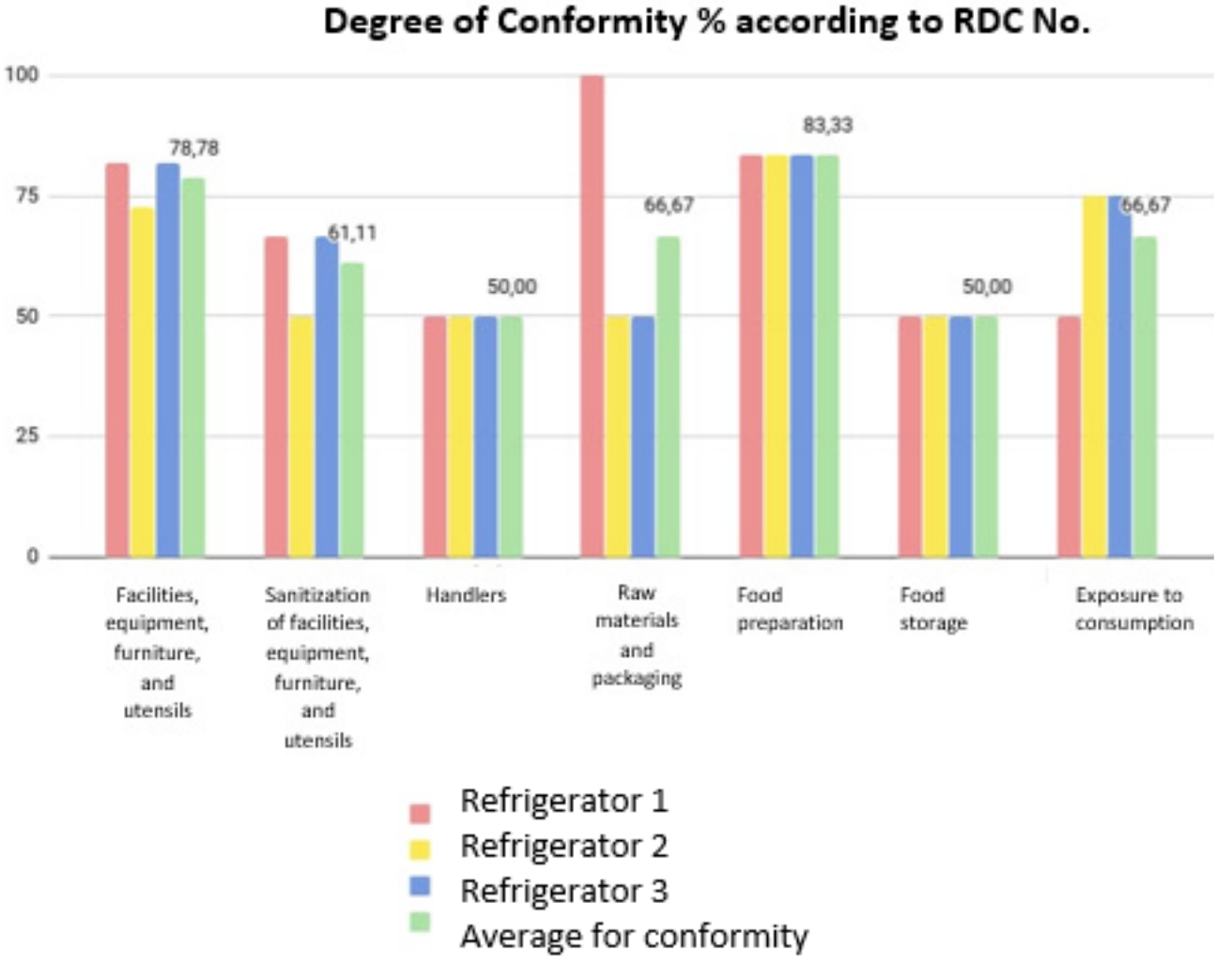
Initially, the result of the evaluation of each block of the checklist was obtained, generating an average of compliance for this and comparing them. The final result was acquired with the sum of all items in compliance and divided by the total number of items in the questionnaire.

The criteria for classifying the establishment were grouped according to the percentage of items in compliance and classified as group I (good), ranging from 76 to 100% of the items met;

group II from 51 to 75% (fair) and group III (risk) from 0 to 50%. The data collected were calculated according to the percentage of the degree of compliance with RDC No. 216/2004 by Ordinance No.0 31 / 2005 and 28 / 03 / 2005 (FORTALEZA 2005).

Results and Discussion

Three slaughterhouses in the city of Paraipaba – CE were evaluated, the data collected are shown in the graph below.



Graph 01 shows the three establishments, indicating the average compliance per item evaluated in the checklist. In block 1 referring to building, facilities, equipment, furniture and utensils, 78.78% of conformities were obtained for the three establishments, with an individual result of 81.8% for refrigerators 1 and 3 and 72.7% for refrigerator 2, it was found that in all establishments the physical facilities such as floors, walls and ceilings were in an adequate state of conservation with the existence of washbasins in the handling area and supplied with products intended for the hygiene of the with waste collectors without manual activation and with periodic calibration of the measuring equipment. On the other hand, in all refrigerators, the luminaires are not appropriate and do not offer protection against explosion and accidental falls.

Santini and Seixas (2016) reported in their study that the buildings, facilities, equipment, furniture and utensils of 10 food and nutrition units presented a great inadequacy, and what contributed to this was the layout of the establishments that are inadequate, leading to the possibility of cross-contamination with food.

Regarding the cleaning of facilities, mobile equipment and utensils, 61.11% of conformities were computed, in the results per slaughterhouse, where 66.6% for slaughterhouse 1 and 3 and 50% for slaughterhouse 2. The most frequent non-conformities observed in all establishments were the use of products with odorizing substances in the cleaning of meat handling and storage areas. And in slaughterhouse 02 and 03 the dilution, contact time and method of application of the same did not comply with the instructions recommended by the manufacturer.

Rodrigues et al. (2017), evaluated 17 sub-items of their study on equipment hygiene, of which it stood out with greater inadequacy with regard to both the periodicity and the lack of a trained person to perform this service.

In the item of handlers, 50% as the average of compliance, and 50% as an individual result for the three establishments. Of the 6 items evaluated, the most frequently associated with non-conformities were the non-use of light-colored caps and uniforms compatible with the activity, and there were no posters to guide handlers regarding correct hand washing and other hygiene habits.

A similar result was found in the study by Oliveira et al. 2016 in meal production units in which thirteen establishments evaluated, the handlers did not wear light-colored uniforms restricted to the production area and wore adornments, favoring contamination.

In raw materials and packaging, 66.67% of compliance, obtaining refrigerator 01 87.5% and refrigerators 2 and 3 50% each. In refrigerator 03 the raw material was not stored on pallets and pallets and in refrigerator 02 the raw material was not submitted to inspection and approval at reception.

Regarding the reception of the raw material in Oliveira's study et al. 2016 also reported that in six establishments analyzed, the correct method of inspection was not carried out in a protected place, favoring the proliferation of microorganisms.

Santini and Seixas (2016) assessed that the receipt of goods presented the highest number of inadequacies, and there was a great apprehension on the arrival of raw materials.

In the item of food preparation, 83.33% as average, and 83.3% for the three establishments as an individual result, since the raw material is integrated for preparation and only exposed to room temperature in the minimum time necessary for cutting. On the other hand, in all establishments there is no monitoring of storage temperature, since it is necessary when they are stored in refrigeration and freezing.

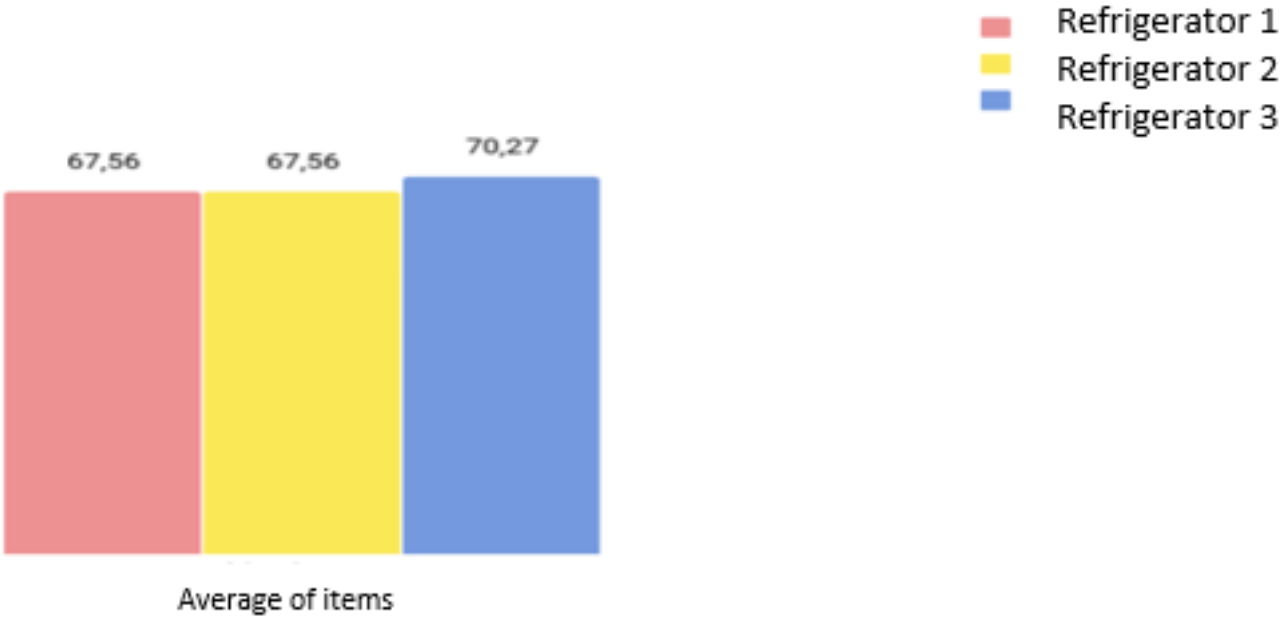
Santos et al. (2012) in their study reported that during the visits to the establishments, the temperatures found were between 4.7° and 18°C, that is, above the safe limit for the preservation of meat.

Regarding storage, 50% of compliance, and 50% as an individual result, 50% for such refrigerators, as a result of the temperature of the food not being monitored. The exposure to the consumption of prepared food was 66.67%, with compliance of 50% for slaughterhouse 1, and 75% for slaughterhouses 2 and 3. RCD 216 of 2004 recommends that food subjected to refrigeration must be stored at temperatures below 5ºC (five degrees Celsius), or frozen at a temperature equal to or less than -18ºC (minus eighteen degrees Celsius) and the equipment necessary for the display or distribution of food under controlled temperatures, must be in an adequate state of hygiene, conservation and

operation.

Figure 2 shows the average percentages of adjustments of the three slaughterhouses evaluated.

Graph 2: Classification of the average overall assessment of cold storage facilities according to RDC 216/2004 by ordinance 31 of Fortaleza CE.



All slaughterhouses are among the group II classification of 51 to 75% (regular). Slaughterhouse 1 and 2 presented 67.56%, while slaughterhouse 3 presented 70.27% compliance. Such a similarity.

Conclusion

The results showed that the three slaughterhouses evaluated presented inadequacies, classifying them as regular group II, based on RDC No. 216/2004 by ordinance No. 31/2005 of 28/03/2005 (FORTALEZA, 2005).

However, the results obtained with the application of the checklist demonstrate that it is necessary to have corrective measures in all establishments and that good handling practices and training of employees are applied, in order for them to provide a better quality food product and

minimize the risks to the health of consumers.

References

BRAZIL. Ministry of Health. Epidemiological analysis of foodborne disease outbreaks in Brazil. Brasília, DF, 2017.

RODRIGUES, Suhellen Priscilla Lírio et al. Evaluation of the hygienic-sanitary quality of oriental restaurants (Japanese and Chinese) in Aracaju. Brazilian Journal of Animal Hygiene and Health, v. 11, n. 3, p. 289-306, 2017.

OLIVEIRA, Janaína Mendonça et al. Hygienic-sanitary conditions of commercial meal production units located in the vicinity of the Federal University of Sergipe. Food and Nutrition Security, v. 23, n. 2, p. 897-903, 2016.

BRAZIL, Ministry of Health. National Health Surveillance Agency. Resolution-RDC No. 216, of December 15, 2004.

SANTOS, Rafaela Cristiane Andrade; BRITO, Jane Velma dos Santos; SOUZA, Vanessa da Silva. Evaluation of the hygienic-sanitary conditions of meats sold in the municipality of Nossa Senhora da Glória-SE. 2012.

SANTINI, Virginia; SEIXAS, Fernanda Rosan Fortunato. EVALUATION OF THE HYGIENIC-SANITARY CONDITIONS OF COMMERCIAL RESTAURANTS IN THE CITY OF ROLIM DE MOURA – RO. Revista Científica da Unesc, Cacoal - Ro, v. 14, n. 1, p.2-10, 10 May 2016.

BUAINAIN, Antonio Marcio; SPERS, Eduardo Eugênio. Food safety and the need for information to consumers. Cadernos de Direito, Piracicaba, v. 10, n. 1, p.21-27, jul. 2010.

COSTA, Bárbara Silveira et al. History and evolution of industrial and sanitary inspection of products of animal origin in Brazil. Cadernos Técnicos de Veterinária e Zootecnia, Minas Gerais, p.9-31, set. 2015.

BATISTA, Fernanda Vilas Bôas; BEZERRA, Vanessa Moraes. Occurrence of foodborne diseases in the municipality of Vitória da Conquista, Bahia. Cadernos Esp, Bahia., v. 9, n. 1, p.27-34, jun. 2015.

FORTUNATO, Luiz Henrique; VICENZI, Keli. KNOWLEDGE ABOUT HYGIENE PRACTICE IN FOOD HANDLING IN RESIDENCES IN CAXIAS DO SUL-RS. Revista UningÁ Review, Caxias do Sul, Rio Grande do Sul, v. 17, n. 1, p.42-47, mar. 2014.