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Isolation of Pathogenic Bacteria from Some Canned Food in Local Market

Athraa Ooda Hussain
Assistant Lecturer, Masters of Food Microbiology
Department of Biology, College of Science, University of Thiqar.

ABSTRACT:

To evaluate the nourishment wellbeing learning and practices in meat taking care of, and to decide microbial burden and pathogenic life forms in meat. An unmistakable review outline was utilized to answer questions concerning the present status of nourishment cleanliness and sanitation rehearsed in the abattoir and butcher shops. Laborers from the abattoir and butcher shops were met through an organized survey to evaluate their nourishment wellbeing information. Bacterial burden was evaluated by serial weakening strategy and the major bacterial pathogens were secluded by utilizing standard strategies. 15.4% of the abattoir laborers had no wellbeing declaration and there was no boiling point water, sterilizer and cooling office in the abattoir. 11.3% of the butchers didn't use defensive garments. There was a sustenance security learning crevice inside of the abattoir and butcher shop laborers. The mean estimations of bacterial heap of abattoir meat, butcher shops and road meat deal was observed to be 1.1×105, 5.6×105 and 4.3×106 cfu/g, individually.

The major bacterial pathogens disconnected were Escherichia coli, Staphylococcus aureus and Bacillus cereus. The study uncovered that there is a sensible crevice on nourishment wellbeing learning by abattoir and butcher shop laborers. The microbial profile was additionally higher contrasted with models set by World Health Organization. Due consideration ought to be given by the administration to enhance the nourishment security learning and the quality standard of meat sold.

Keywords: Bacillus cereus, Escherichia coli, food safety, Staphylococcus aureus.

INTRODUCTION:

Nourishment borne sicknesses happen regularly in creating nations especially in Africa as a result of the overall poor sustenance taking care of and sanitation rehearses, insufficient nourishment security laws, frail administrative frameworks, absence of money related assets to put resources into more secure hardware and absence of instruction for sustenance handlers. Of the sustenances planned for people, those of creature cause have a tendency to be most risky unless the standards of nourishment cleanliness are utilized. Creature items, for example, meats, fish and their items are for the most part viewed as high-hazard merchandise in appreciation of pathogen substance, regular poisons and other conceivable contaminants and adulterants. Bacterial defilement of meat items is an unavoidable outcome of meat handling.

Regardless of the possibility that information in regards to meat borne maladies in Ethiopia are to a great degree rare, a couple examines led in various parts of the nation have demonstrated the general wellbeing significance of a few bacterial pathogens connected with nourishments of creature cause [1]. Accordingly, the quantity of business sustenance foundations in the city has been noticeably expanding. As of now, there are around 110, 308, 292 enlisted butcher shops, cafeterias and eateries, separately. The wellspring of meat for all these business nourishment foundations. Also, this abattoir gives meat necessities of higher foundations and military camps.

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On a normal of 40-65 male steers are butchered every day amid non-fasting days. In any case, the accessible nature of the city abattoir is underneath standard.This is on the grounds that the abattoir was developed 50 years back considering the number of inhabitants in 15 000 of the city at the time furthermore the abattoir had no fundamental offices like shocking, dying, destruction and cooling rooms. The present populace of the city is around 215 546, and there is an expanded interest for nourishments of creature source. No practically identical information was accessible with respect to the evaluation of nourishment security hone, sustenance borne maladies and microbial heap of meat in the abattoir and butchery shops of the city. These components could block governments' capacity to precisely apply measures on the effect of sustenance sullying issues on general wellbeing. Hence, the present study was intended to survey the sustenance wellbeing information and practices in meat taking care of, and to decide microbial burden and pathogenic life forms in meat [2].

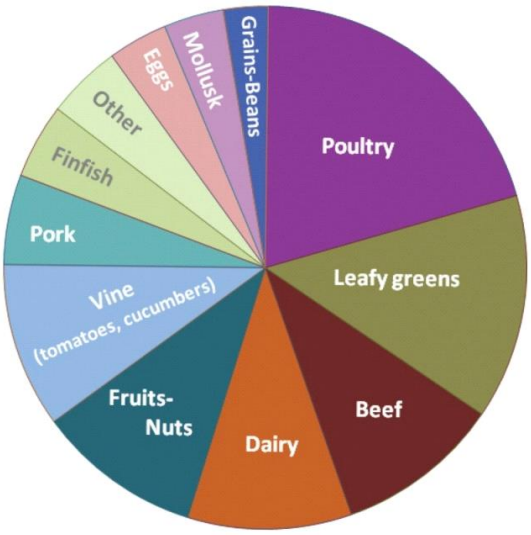

Figure 1: Distribution of illnesses by food type in 1,565 foodborne outbreaks caused by a single food type and reported to CDC's National Foodborne Disease Outbreak Surveillance System

METHODS:

Study design:

A descriptive survey design was used to answer questions concerning the current status of food hygiene and sanitation practiced in the abattoir and butchery shops. Hygiene and sanitation was determined by the use of structured interview and through direct observations of the hygienic status and practices by abattoir and butcher shop workers. Bacteriological analysis of meat with the intention of colony count and identifying pathogenic bacteria were conducted to supplement the sanitary survey. The target population constituted all the owners of meat shops in the city as well as the abattoir workers [3].

Sample Collection:

Arbitrary inspecting methodology was taken after. Because of the restricted asset to incorporate all the butcher shops in the study, 5 butcher shops were arbitrarily chosen out of 15-20 butcher shops accessible in the six sub-urban areas (i.e. a sum of 30 butcher shops out of the current 110 were incorporated into the study which represents around 27.3% of the aggregate size). Three crisp minced meat tests were acquired from the chose butcher shops at various times.

The wellspring of meat in the butcher shop was either from the city abattoir or from the patio butcher. Five meat tests were additionally gathered from the city abattoir and from the road meat deals shops independently. The examples were gathered aseptically in a spotless polyethylene sack once per week for back to back 8 weeks and transported inside of 3 h to the research center in cooler for further bacteriological examination as portrayed by the strategies for Fawole and Oso. A sum of 100 meat tests were gathered to survey the microbial burden. Tests were inspected upon landing to the research facility or were kept in fridge until prepared for a most extreme of 48 h [4].

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Enumeration of Total Viable Count and Isolation Of Bacteria:

Ten gram of every meat test was weighed out and homogenized into 90 mL of sterile refined deionized water utilizing a sterile homogenizer (Silverson, France). From the 10-fold weakenings of the homogenates; 0.1 mL of 10−2, 10−3 and 10−4 weakenings of the homogenates were plated in reproduce on standard plate check agar, utilizing pour plate strategy. The plates were then hatched at 37 °C for 24-48 h. Toward the end of the brooding period, provinces were tallied utilizing the lit up settlement counter. The means every plate were communicated as settlement shaping unit of the suspension (cfu/g) [5]. Bacterial detachment was performed utilizing supplement agar (NA) and peptone water (PW) as general and enhanced media and other media with specific and differential qualities. All media were readied by maker's (Himedia, India) detail and suspected specimens were vaccinated on Mac Conkey agar, eosin methylene blue agar, Edward's medium and Mannitol salt agar. Plates were brooded at 37 °C for 24-48 h. Discrete provinces were subcultured into crisp agar plates aseptically to get unadulterated societies of the disengages. Immaculate segregates of coming about development were then put away at 4 °C and utilized for further recognizable proof of microorganisms [6].

Identification of bacteria:

Provinces recognized as discrete on supplement agar were deliberately analyzed perceptibly for social qualities, for example, the shape, shading, size and consistency. Gram recoloring and also fitting biochemical tests was done by methodology. The confines were distinguished by contrasting their morphological and biochemical qualities (catalase, oxidase, coagulase, indole, urease, sugar tests) with standard reference life forms with those of referred to taxa, as portrayed by Bergey's Manual for Determinative Bacteriology [7].

RESULTS:

Educational Status of Abattoir Workers and Training of Meat Handlers on Personal Hygiene Practice:

Out of the aggregate 26 abattoir laborers talked with, 7.7% of them were unskilled. 61.5% of the respondents did not take preparing with respect to meat cleanliness. The individuals who got preparing were not welcoming the adequacy of the preparation which just centered around the administration of creature skin in the abattoir [7].

Practice Regarding the Hygienic Status of the Butchers in the City Abattoir:

There was no heated water, sterilizer and maintenance room (cooling offices) in the abattoir. 14.6% of the respondents did not wear covers, and they all took care of meat with uncovered hands. Around 61.6% of the interviewee reacted that there was no control of wearing adornments materials amid working hours in the abattoir and 15.4% of the respondents have no wellbeing endorsement [8].

Table 1: Practices of Meat Handlers Regarding Personal Hygiene and Cleanliness of the Abattoir.

Characteristics		Percent (%)
Control of wearing jewelry materials	Strict control	3.8
	Reasonable control	34.6
	No control at all	61.6
Presence of health certificate	Yes	84.6
	No	15.4
Protective clothing	Overall	84.6
	Aprons	69.2
	Hairnets	61.6
	Gumboots	96.2

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Aerobic Plate Count:

Five meat tests from abattoir, thirty meat tests from butcher shops and five meat tests from road meat deals shops were broke down and the mean bacterial number (cfu/g) were discovered 1.1×105, 4.3×106 and 5.6×105, separately. The outcome demonstrated that the most elevated mean of aggregate feasible check of microbial burden were seen in road meat deals shops which was fundamentally distinctive (P=0.0075) [9].

Bacterial Isolation:

The recurrence and rate of gram positive and gram negative bacterial pathogens separated from crisp meat gathered from abattoir, butcher shops and road meat deals [10]. Escherichia coli (E. coli) was the transcendent segregate (27.3%) trailed by Staphylococcus aureus (S. aureus) (21.2%) and Bacillus cereus (B. cereus) 5 (15.2%). Pseudomonas aeruginosa (P. aeruginosa), Klebsiella and Enterobacter spp. were separated at recurrence of (9.1%) each. The slightest bacterial confines were Citrobacter and Enterococcus spp. with the recurrence of (6.1%) and (3.0%), individually [11].

Table 2: Frequency and Occurrence of Gram Positive and Negative Bacterial Pathogens in Crisp Meats from Abattoir, Butcher Shops and Road Meat Deals in Various Sub-Urban Communities.

Pathogens	Total Number (%)	Butcher shops (%)	Abattoir (%)	Street meat sales (%)
E. coli	9 (27.3)	2 (22.2)	2 (22.2)	5 (56.6)
S. aureus	7 (21.2)	2 (28.6)	2 (28.6)	3 (42.9)
Bacillus cereus	5 (15.2)	2 (40.0)	1 (20.0)	2 (40.0)
P. aeruginosa	3 (9.1)	1 (33.3)	0 (0.0)	2 (66.7)
Klebsiella spp.	3 (9.1)	1 (33.3)	1 (33.3)	1 (33.3)
Enterobacter spp.	3 (9.1)	1 (33.3)	0 (0.0)	2 (66.7)
Citrobacter spp.	2 (6.1)	0 (0.0)	0 (0.0)	2 (100.0)
Enterococcus spp.	1 (3.0)	1 (100.0)	0 (0.0)	0 (0.0)
Total	33 (100.0)	10 (30.3)	6 (18.2)	17 (51.5)

CONCLUSION:

The study was completed to evaluate the nourishment security information, rehearses in treatment of meat and appraisal of microbial heap of meat and distinguishing pathogenic creatures. Individual and abattoir cleanliness, abattoir waste transfer framework, preparing and hygienic regulation of the abattoir and butcher shops were incorporated into the study. In the present study 61.5% of the respondents from the abattoir laborers have not taken preparing concerning sustenance cleanliness. In any case, as indicated by Adams and Moss, preparing of sustenance handlers in regards to the essential ideas and necessities of individual cleanliness has vital influence in guaranteeing safe items to the consumer.

The routine of lawn butcher and road meat deals are the foremost destinations for bacterial sullying of meat. The higher rate of E. coli is connected with poor cleanliness as terrace butchering and road meat deals practices are well known in the study region. What's more, the hygienic practices in the abattoir and butcher shops are not as to the normal level and this could likewise add to the higher frequency of the creature. Enabulele and Uraih reported E. coli pervasiveness rate to be 85.65% in a study with the new meat tests from abattoir and conventional open market every, recording 100% E. coli pervasiveness. B. cereus and S. aureus have additionally been known not nourishment borne sickness. S. aureus have been accounted for in the nose and throat of sustenance handlers, and in more than half of solid people. Consequently, the tainting of meat with this living being might be

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connected with poor hygienic practices by nourishment handlers. B. cereus is a spore previous; it can be found noticeable all around and debases nourishment, and the pollution of meat with this life form could be because of the vicinity of spore noticeable all around and their imperviousness to warm. P. aeruginosa being broadly spread in nature and particularly in soil, water and on plants, can without much of a stretch taint meat since it is normally uncovered.

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