

بسم الله الرحمن الرحيم

Sudan University of Science and Technology

College of Graduate Studies

Application of Hazard Critical Control Point (HACCP) concept to study slaughter house hygiene and Bacterial Carcass Contamination in

ELGadaraf Slaughterhouse

تطبيق مفهوم تحليل المخاطر وتحديد نقاط التحكم الحرجة لتقييم الوضع الصحي ودراسة التلوث البكتيري للذبيح بمسلخ القصارف

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A thesis submitted to the College of Graduate Studies in the fulfillment of the requirements for the Master degree in Preventive Medicine

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Al -Gadaraf , August 2018

الآية

قال تعالى:

((أَوْلَمْ يَرَوْا أَنَّا خَلَقْنَا لَهُمْ مِمَّا عَمِلَتْ
أَيْدِينَا أَنْعَامًا فَهُمْ لَهَا مَالِكُونَ (71)
وَذَلَّلْنَاهَا لَهُمْ فَمِنْهَا رَكُوبُهُمْ وَمِنْهَا
يَأْكُلُونَ (72) وَلَهُمْ فِيهَا مَنَافِعُ وَمَشَارِبُ
أَفَلَا يَشْكُرُونَ (73))

صدق الله العظيم

سورة يس

الآيات (71-73)

Dedication

To who supported and Encouraged me to reach this level.

My father

To give me all the happiness and love

My mother

To my brothers & sister

To

my husband and kids

Ali- elmujtaba- duia- danya

To

my supervisor

To

my friends

Acknowledgment

Almighty God must be praised and thanked, for offering me strength,

Patience and will to accomplish this work.

I am grateful to my supervisor

Dr. Mohamed Abdalslam Abdalla

for his advice and guidance.

Thanks are due to the staff at the Veterinary Research Institute (VRI) -
ELGadaraf State

Thanks are due to the staff at the Microbiology laboratory of the Faculty of
Medicine -EL Gadaraf University

To the Ministry of Animal Resources and Fisheries, my special thanks are
accorded especially to my colleges in ElGadaraf slaughter house .

ABSTRACT

This study was conducted to assess the hygiene status by determinate bacterial contamination of bovine carcasses in ElGadarf slaughterhouses. This was done through application of HACCP system

A total of 300 swab samples were collected for total viable count (TVCs) of bacteria. From March to June 2016, the swabs were collected from 25 cattle carcasses. These were randomly selected and sampled from different sites.

The TVC ranged from (4.48 ± 0.41) to $(5.79 \pm 0.39) \log_{10} \text{cfu/cm}$. The mean total viable count at neck site was $(5.68 \pm .40)$, (5.17 ± 0.46) and $(5.79 \pm 0.39) \log_{10} \text{CFU/cm}^2$ at the three points of operation (at post skinning, post evisceration and post washing) respectively with statistically significant difference ($P < 0.05$). In shoulder site, TVCs were (5.15 ± 0.41) , (4.99 ± 0.34) and $(5.26 \pm 0.31) \log_{10} \text{CFU/cm}^2$, at the three points of operation (at post skinning, post evisceration and post washing) respectively with statistically significant difference ($P < 0.05$).

In brisket site was 5.03 ± 0.35 , 5.50 ± 0.35 and $5.28 \pm 0.42 \log \text{CFU/cm}^2$, at the three points of operation (at post skinning, post evisceration and post washing) respectively with statistically significant difference ($P < 0.05$). In rump site TVCs were 4.48 ± 0.41 , 4.97 ± 0.30 and $5.11 \pm 0.40 \text{CFU/cm}^2$ at the three points of operation (at post skinning, post evisceration and post washing) respectively with statistically significant difference. The TVCs of the hands of the workers at post skinning, post evisceration and post washing were, 5.00 ± 0.27 , 5.52 ± 0.23 and $5.00 \pm 0.20 \log_{10} \text{CFU/cm}^2$, respectively without statistically significant differences ($P > 0.05$) between them. TVCs in knives after skinning and evisceration were 5.30 ± 0.50 and $5.04 \pm 0.49 \log_{10} \text{CFU/cm}^2$, respectively without statistically significant difference ($P > 0.05$). The study also revealed that the contamination of the carcasses resulted from three

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types of bacteria .The highest relative frequency of isolates was *Staphylococcus aureus* (49.3%), *Escherichia coli* (32.0%) and *Salmonella* species (18.2%). Similar isolates of bacteria were found on the labors' hands and knives, their relative frequencies were *Escherichia coli* (48.30%), *Staphylococcus aureus* (38.30%) and *Salmonella spp* (13.30 %). It is concluded that the level of bacterial contamination in bovine carcasses at ElGadarf slaughterhouse was very high and constituted a real public health hazard. It is recommended that proper washing of bovine carcasses using treated water should be applied during slaughtering processes to reduce the level of bacterial contamination .

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المستخلص

تهدف هذه الدراسة لمعرفة وتحديد التلوث البكتيري في ذبيح الأبقار بمسلخ القضارف في الفترة من مارس وحتى يونيو 2016 تم جمع عدد 300 مسحة وذلك لقياس العدد الحي الكلي للبكتيريا من عدد 25 من الأبقار المذبوحة التي اختيرت عشوائيا وتم اخذ العينات من مناطق مختلفة من الذبيح.

تراوح العدد الكلي الحي للبكتيريا من (4.48 ± 0.41 to $5.79 \pm 0.39 \log_{10} \text{cfu/cm}$) وذلك نسبة للتلوث المتكرر للذبيح بواسطة المعدات وأيدي العاملين .

متوسط العدد الحي الكلي للبكتيريا في منطقة العنق كان (5.79 ± 0.39 ، 5.17 ± 0.46 ، 5.68 ± 0.40) \log_{10} CF U/cm² بعد عمليات الذبيح الثلاث (الذبح -الفتح -الغسل) علي التوالي مع وجود فروق ذات دلالة إحصائية . منطقة الكتف متوسط العدد الحي الكلي (5.26 ± 0.31 ، 4.99 ± 0.34 ، 5.15 ± 0.41) \log_{10} CF U/cm² بعد عمليات الذبح الثلاث (الذبح -الفتح -الغسل) علي التوالي مع وجود فروق ذات دلالة إحصائية وفي منطقة الفخذ متوسط العدد الحي الكلي (5.11 ± 0.40 ، 4.97 ± 0.30 ، 4.48 ± 0.41) \log_{10} CF U/cm² بعد عمليات الذبيح (الذبح- الفتح -الغسل) علي التوالي مع وجود فروق ذات دلالة إحصائية وفي منطقة الأضلاع متوسط العدد الحي الكلي (5.03 ± 0.35 ، 5.28 ± 0.42 ، 5.50 ± 0.35) \log_{10} CF U/cm² بعد عمليات الذبيح الثلاث (الذبح- الفتح -الغسل) علي التوالي مع وجود فروق ذات دلالة إحصائية . وفي أيادي العاملين متوسط العدد الحي الكلي (5.00 ± 0.27 - 5.52 ± 0.23 - 5.00 ± 0.20) \log_{10} CFU/cm بعد عمليات الذبح الثلاث (السلخ -الفتح -الغسل) علي التوالي مع عدم وجود فروق ذات دلالة إحصائية . وفي السكاكين كان متوسط العدد الحي الكلي (5.04 ± 0.49 ، 5.30 ± 0.50) \log_{10} CF U/cm² بعد عمليتي السلخ والفتح علي التوالي مع عدم وجود فروق ذات دلالة إحصائية .

تم عزل ثلاث أنواع من البكتيريا في هذه الدراسة وكانت اعلي نسبة من البكتيريا المعزولة هي المكورات العنقودية 49.3% تليها الاشريكية القولونية بنسبه 32.0% ثم السالمونيلا بنسبه 18.2%)

كما تم عزل نفس هذه البكتيريا من أيادي العمال والسكاكين وكانت اعلي نسبة معزولة هي الاشريكية القولونية, (48.30% تليها المكورات العنقودية (38.30% ثم السالمونيلا بنسبه 13.30

خلصت هذه الدراسة إن مستوي التلوث البكتيري في لحوم الأبقار المذبوحة في مسلخ القضارف عالي جدا ويشكل خطر حقيقي علي الصحة العامة وتوصي هذه الدراسة بان يتم الغسل باستخدام المياه المعالجة أثناء الذبيح للحد من التلوث بالكائنات الحية الدقيقة .

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