World Academy of Science, Engineering and Technology
International Journal of Biomedical and Biological Engineering
Vol:17, No:09, 2023

Prevalence, Antimicrobial Susceptibility Pattern and Public Health Significance for Staphylococcus Aureus of Isolated from Raw Red Meat at Butchery and Abattoir House in Mekelle, Northern Ethiopia

Authors : Haftay Abraha Tadesse

Abstract : Background: Staphylococcus is a genus of worldwide distributed bacteria correlated to several infectious of different sites in humans and animals. They are among the most important causes of infection that are associated with the consumption of contaminated food. Objective: The objective of this study was to determine the isolates, antimicrobial susceptibility patterns and Public Health Significance of Staphylococcus aureus in raw meat from butchery and abattoir houses of Mekelle, Northern Ethiopia. Methodology: A cross-sectional study was conducted from April to October 2019. Socio-demographic data and Public Health Significance were collected using a predesigned questionnaire. The raw meat samples were collected aseptically in the butchery and abattoir houses and transported using an ice box to Mekelle University, College of Veterinary Sciences, for isolating and identification of Staphylococcus aureus. Antimicrobial susceptibility tests were determined by the disc diffusion method. Data obtained were cleaned and entered into STATA 22.0 and a logistic regression model with odds ratio was calculated to assess the association of risk factors with bacterial contamination. A P-value < 0.05 was considered statistically significant. Results: In the present study, 88 out of 250 (35.2%) were found to be contaminated with Staphylococcus aureus. Among the raw meat specimens, the positivity rate of Staphylococcus aureus was 37.6% (n=47) and (32.8% (n=41), butchery and abattoir houses, respectively. Among the associated risks, factories not using gloves reduces risk was found to (AOR=0.222; 95% CI: 0.104-0.473), Strict Separation b/n clean & dirty (AOR= 1.37; 95% CI: 0.66-2.86) and poor habit of hand washing (AOR=1.08; 95%CI: 0.35 3.35) was found to be statistically significant and have associated with Staphylococcus aureus contamination. All isolates of thirty-seven of Staphylococcus aureus were checked and displayed (100%) sensitive to doxycycline, trimethoprim, gentamicin, sulphamethoxazole, amikacin, CN, Co trimoxazole and nitrofurantoi. Whereas the showed resistance to cefotaxime (100%), ampicillin (87.5%), Penicillin (75%), B (75%), and nalidixic acid (50%) from butchery houses. On the other hand, all isolates of Staphylococcus aureus isolate 100% (n= 10) showed sensitive chloramphenicol, gentamicin and nitrofurantoin, whereas they showed 100% resistance of Penicillin, B, AMX, ceftriaxone, ampicillin and cefotaxime from abattoirs houses. The overall multi-drug resistance pattern for Staphylococcus aureus was 90% and 100% of butchery and abattoir houses, respectively. Conclusion: 35.3% Staphylococcus aureus isolated were recovered from the raw meat samples collected from the butchery and abattoirs houses. More has to be done in the development of hand washing behavior and availability of safe water in the butchery houses to reduce the burden of bacterial contamination. The results of the present finding highlight the need to implement protective measures against the levels of food contamination and alternative drug options. The development of antimicrobial resistance is nearly always a result of repeated therapeutic and/or indiscriminate use of them. Regular antimicrobial sensitivity testing helps to select effective antibiotics and to reduce the problems of drug resistance development towards commonly used antibiotics.

Keywords : abattoir house, AMR, butchery house, S. aureus
Conference Title : ICBAHS 2023 : International Conference on Biomedical and Health Sciences
Conference Location : Toronto, Canada
Conference Dates : September 18-19, 2023