The relationship between hygiene assessment system audit scores and the bacteriological status of single species in red meat abattoirs in the free state province, South Africa

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The Hygiene Assessment System (HAS) is an audit checklist that is used to measure the hygiene status of the abattoir. The final HAS score for individual abattoirs is graded to a sum of 100, and is interpreted as a measurement of the potential risk to public health. Theoretically, the final HAS score reflects the likelihood of safe meat being produced in that specific abattoir on the day of audit. The aim of the study was to test the association between the HAS scores and the bacteriological contamination in 6 single species high throughput abattoirs in the Free State province. This was done to validate the efficiency of the HAS score as a measure for meat safety and to determine the extent to which HAS audit score and bacteriological tests mirror each other. Each abattoir was visited once and the audit was performed according to official HAS: Four carcasses were sampled at 4 different carcass sites at 3 processing stations; and 10 direct air samples were collected from the slaughter floors. All the abattoirs showed compliance with the meat safety legislation since the total HAS scores ranged from 68 to 94. However, it was found that the effectiveness of HAS audits as a measure of food safety was questionable, since it does not demonstrate the risk/impact of non-compliance. The microbiological analysis for both carcass and air samples included the test for aerobic plate count (APC), *E. coli*, *Salmonella* species and *Staphylococcus aureus*. The APC for the abattoirs ranged from undetectable to $9.9 \times 10^4$ CFU.m$^{-2}$ for carcass surfaces and for bioaerosols it was 0 to $2.4 \times 10^2$ CFU.m$^{-3}$. The total count for *E. coli*, *S. aureus* and *Salmonella* species exceeded the national maximum acceptable limits. These results highlight the possibility of the occurrence of foodborne diseases in the human population. In addition, the relationship between *E. coli*, *S. aureus*, *Salmonella* spp., APC, and total HAS scores, revealed no significant relationship. These findings further justify the fact that HAS audits should not be used as a measure of meat safety. The results also suggested the importance of the inclusion of bacterial tests in meat safety audits because a high HAS score does not signify that meat is entirely safe for human consumption.

Biography

I Matle is working as an Assistant Professor in Onderstepoort Veterinary Institute, South Africa.

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