

Preliminary Assessment of The Microbiological Quality of Meat and Its Products Sold in Bloemfontein, South Africa

Christy Manyi-Loh¹, Hilda Nyathi², Olga De Smidt¹, Ryk Lues¹

¹Central University of Technology, Bloemfontein, South Africa. ²National University of Science and Technology, Bulawayo, Zimbabwe

Abstract

Introduction: South Africa is amongst the major contributors to the total increase in global meat consumption. The population consumes both processed and unprocessed meats. Contamination of carcasses with microbes can occur during processing and manipulation; however, processed meats are more vulnerable to contamination owing to the handling procedures. This study aimed at evaluating the microbial contamination in raw meat and meat product.

Methodology: Different brands of polony, raw chicken, beef, and pork were investigated. Briefly, 25g of each sample was introduced into 225ml of sterile buffered peptone water and incubated overnight at 37°C for enrichment. Following incubation, solidified XLD gar and Palcam agar were inoculated with a loopful of bacterial growth from RV broth and Fraser broth, respectively, using the spread plate technique. The plates were incubated at 37°C for 24 - 28hrs to check for growth of *Salmonella* sp and *Listeria* sp. In determining TVC and Coliform counts, 25g meat sample was transferred aseptically into a sterile Stomacher bag containing 225mL of 0.9% physiological saline and homogenised using Stomacher machine for 2mins at room temperature to create a uniform mixture of 10⁻¹ dilution. Homogenised samples were tenfold serially diluted in sterile saline. A hundred microlitres (100µL) of diluted samples were evenly spread on Nutrient agar and Violet Red Bile agar and incubated at 37°C for 24 hours. Experiments were conducted in triplicate and mean values of colony forming units were recorded on respective tables.

Results and Discussion: TVC ranging from 1.7 - 3.7 x10¹ cfu/g, were observed with all (100%) the processed meat products (polony), indicating an estimate of the overall bacterial population. This might be as a result of contamination via processing as meat is handled by workers and processed using machines and other materials into polony. In addition, both the casings and samples of the different polony showed some growth on Palcam agar, suggesting the presence of *Listeria* species.

Conclusion: Growth on the microbiological medium indicated the presence of the bacterial contamination (*Listeria*). Further studies are needed to confirm the identity of the bacterium and their antibiotic resistance profiles.