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Microbial Quality of Fresh Red Meat Sold at Thohoyandou Retailers, South Africa

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Abstract

Meat is the muscle tissue of a slaughtered animal. The protein profile of meat consists of amino acids that are described as excellent because it consists of all the essential amino acids needed by the body. The microbiological quality of meat depends on the physical status of the animal upon slaughtering, contamination during slaughtering and processing, the temperature upon storage and distribution conditions. The aim of this study was to investigate the microbiological quality of fresh red meat sold in Thohoyandou retail shops and butcheries.

The fresh meat was evaluated for microbiological quality such as total plate count (TPC), coliform bacteria, *Salmonella* species, yeast and mold*, Staphylococcus aureus* and *Escherichia coli*. Biochemical tests such as triple sugar iron test, catalase test and Simmon's citrate agar test were conducted. The TPC ranged from 4.4911 to 8.8406 $\log_{10}$ CFU/g with sample G having highest significant difference at $p < 0.05$. Yeast and Mould colonies ranged from 3.9747 to 8.8869 $\log_{10}$ CFU/g with sample H having a higher significant difference at $p < 0.05$. Coliforms ranged from 3.0396 to 6.6986 $\log_{10}$ CFU/g with sample I and J with a higher significant difference at $p < 0.05$ although sample I had more colonies.

Staphylococcus aureus, *Salmonella* and *Escherichia coli* (*E. coli*) were undetectable. Using pure colonies, catalase test and Simmon's citrate test were negative while triple sugar iron test, coliform had an alkaline slant and yellow butt, negative gas, and negative Hydrogen sulfide (H_2S). Per the results of this study, Coliform bacteria, yeast and mould as well as total plate count (TPC) were above the required limit according to the Veterinary Public Health (VPN15) and the Foodstuffs, cosmetics and disinfection ACT 54 of 1972. The positive test for coliform bacteria on triple sugar iron test also raises hygiene concerns on the meat. It is therefore important to continuously monitor the microbial quality of meat to safeguard the health of people.

Keywords: Fresh meat, Thohoyandou, microbial quality, biochemical test.

Biography: Shonisani E. Ramashia

Dr. Shonisani E. Ramashia is the Head of the Department of Food Science and Technology. She joined the University as a contract Senior Laboratory Technician (2013-2014). She was then employed as Teaching Assistant (2015-2016). She teaches Food Microbiology, Food Commodity Processing, Product

Development and Sensory Evaluation of Foods (coordinating). I am currently supervising two Masters' students and one PhD student. One master student completed and graduating in September 2019 graduation. I also supervised more than 20 BSc in Food Science and Technology final year (4th) research student. I worked in the Food Industry from 2008 to 2013 where I held different positions such as Quality Controller, Senior Food Microbiologist and Departmental Food Technologist. I have 10 published journal that are approved by DHET, one book chapter and two book chapters accepted. I am a project leader for WRC and ARC funded project.