Nutrient content of South African beef

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Research focus area: Red Meat Safety, Nutritional Quality and Value

Full Title of the project

Quantifying the factors that influence the composition of South African beef

Aims of the project

- To determine the nutritional profile of selected beef cuts (Age A2, AB2, B2 and C2) with subcutaneous fat removed.
- To determine the effect of age and feeding regime on the composition of South African beef.
- To determine the effect of trimming on carcass composition, by comparing current research data with data from previous South African composition studies on beef without subcutaneous fat removed.

Executive summary

Introduction:

Red meat, including beef, is non-homogenous, unique to each country, and continually changing in composition due to breed and feed differences, slaughter practices as well as post-slaughter activities prior to consumption. It is observed that the amount of fat on red meat carcasses has decreased over time, simultaneously increasing nutrient density through feed efficiency. Actions towards this include breed selection, feed manipulation,

and alterations in animal slaughter age and weight. Further removal of fat through retail and food preparation practices, such as trimming, has resulted in even leaner end products, in line with current nutrition and health recommendations and trends.

Objective:

The physical and nutrient composition of South African beef from four age groups (A2, AB2, B2, C2; 2014) was determined. As the predominant fat code on the market, fat code 2 carcasses were used in all three studies. The three aims of the study was to 1) determine the nutritional profile of selected beef cuts (Age A2, AB2, B2 and C2) with and without subcutaneous fat (trimmed), to 2) determine the effect of age and feeding regime on the composition of South African beef and 3) to determine the changes in composition over time by comparing current research data with data from previous South African composition studies on beef, including determining the effect of trimming.

Main findings:

Aim 1: South African beef is a nutrient dense source of protein and minerals such as potassium, iron, selenium and zinc, and is naturally low in sodium – dependent on the degree of trimming. The nutritional profile of South African beef from 4 age groups indicates that South African beef can be a low fat food, and can be labelled and marketed as such.

Aim 2: Significant differences in selected nutrients were observed in meat cuts between age groups and feeding regimes, with a tendency for fat to increase with age, and protein to decrease with age. Fat content was significantly lower in all three cuts from age A carcasses than in any of the other age groups. In all three cuts, selenium content was significantly higher in grass fed carcasses (age AB and age B), than in carcasses from beef finished off on grain fed feeding systems (age A and age C).

Aim 3: Compared to previous studies on South African beef, the 2014 data indicates notable changes in the composition of South African beef over time, specifically related to a reduction in fat content. This reduction in fat content together with changes in carcass weight has resulted in subsequent changes in carcass composition and thus changes in nutrient density. The data attests that in order to align industry processes, legislation and marketing strategies, continued research on physical and nutritional composition needs to be performed for the baseline information to remain relevant and accurate.