In vivo Serrana goat kid carcass prediction by ultrasound measurements

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INTRODUCTION

The use of real time ultrasound (RTU) to predict carcass composition was widely used for cattle, swine and sheep. However, for goat and particularly for light goat kids, this technique was less investigated.

OBJECTIVES

The aim of this work was to in vivo predict carcass composition of goat kids using RTU measurements.

Figure 1 – Serrana goat

RESULTS

The correlation between RTU and carcass measurements were significant (r >0.58, P<0.01) for all muscle measurements. For fat measurements only the RTU SFS was significantly correlated with carcass measurement (r=0.96, P<0.01).
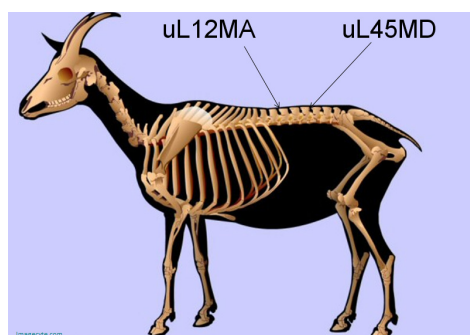

Figure 3- Location of best predictor RTU measurements

MATERIAL AND METHODS

- Forty two goat kids of the Serrana breed (13.4±5.2 kg live weight) were utilized.
- The in vivo RTU images were made with an ALOKA 500V scanner equipped with a 5 MHz probe.
- The probe was placed over the 9th, 11th thoracic vertebrae and over the 1st, 3rd and 5th lumbar vertebrae. Images between 3-4ª sternebrae were also captured.
- All RTU images were analysed using the ImageJ software.
- With the images obtained on thoracic and lumbar sites it was determined the depth (MD) and area (MA) of Longissimus dorsi muscle (Figure 2) and the subcutaneous fat thickness above this muscle (SFL).
- At sternum the subcutaneous fat depth (SFS) was also measured.
- Carcasses were stored at 4 ºC for 24 h.
- After this period the carcasses were divided and the left half was entirely dissected into muscle, dissected fat (subcutaneous fat plus intermuscular fat) and bone.
- Prior to the dissection measurements equivalents to that obtained in vivo with RTU were recorded.
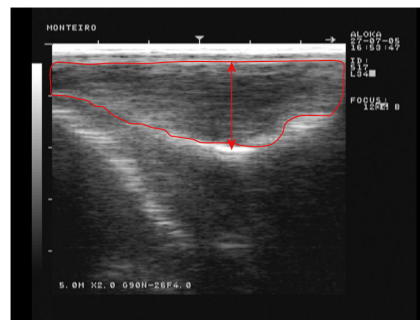- Using the Statistica 5 it was performed correlation and regression analysis.

Figure 2 – Image of RTU area and muscle depth measurements

The RTU measurements can explain the kid goat carcass composition variation (r^2 between 0.40-0.89; 0.24-0.58 and 0.31-0.83, P<0.01, for muscle, dissected fat and bone respectively).

The best fit for muscle and bone was obtained with the uL12MA and for dissected fat with uL45MD RTU measurements. The position of these measurements are shown in Figure 3.

CONCLUSIONS

This research shows that RTU is able to in vivo measure LM but not the SFL, due to their small amount. It can also be conclude that RTU measurements can explain kid goat carcass tissue variation.