Breaking resistance of lamb ears according to ear tag position and breed

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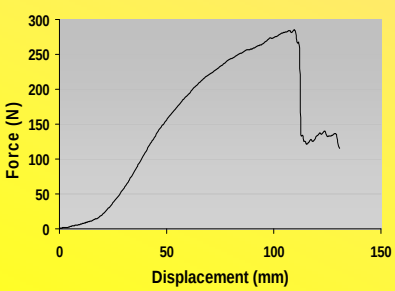
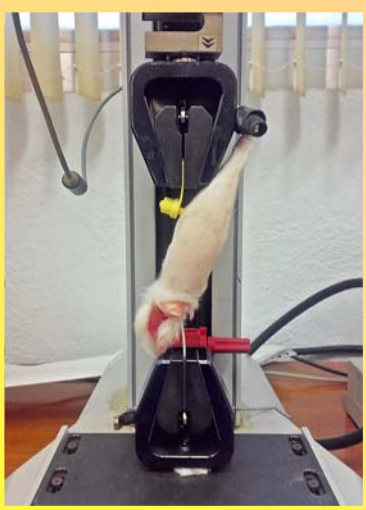
INTRODUCTION

Identification of sheep and goats has become an important issue in the EU since the publication of Regulation CE 21/2004 (recently amended by SANCO/1427/2008), which establishes a double identification (ID) system for replacement animals with both plastic ear tags and electronic devices.
Little information is available on the retention of official ear tags, and no research has been conducted on the biocompatibility and physical features of ear tags (i.e. unfastening force of the ear tags and breaking resistance of the ear) in sheep. This study explores the breaking resistance of sheep ears.

TENSILE TEST

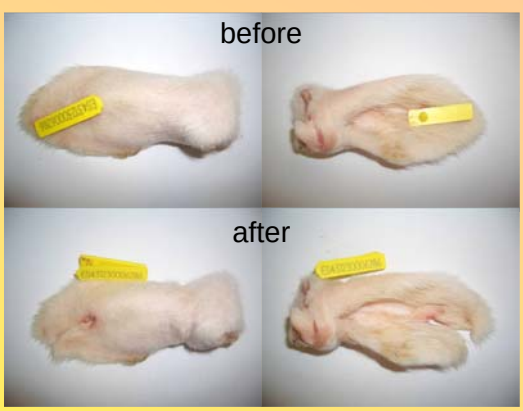
Breaking force was measured by submitting the ears to a tensile test using a computer-controlled universal testing machine (PCM Mecmesin).





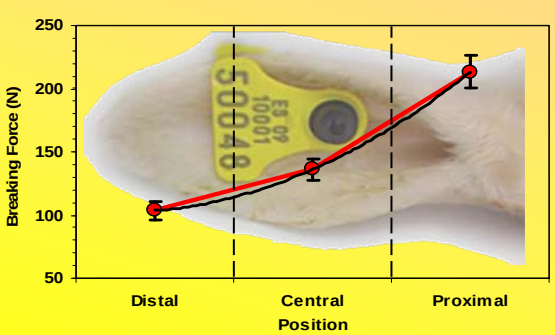
Ears were locked to a fixed clamp at the insertion base and ear tags fixed to a mobile clamp to be tested by pulling the ear tag at a constant displacement rate (500 mm/min) until the ears broke.

A total of 55 lamb ears with official plastic ear tags were obtained after harvesting in a commercial slaughterhouse.



Ears were classified according to:
- Breed (Manchega, n = 23; Lacaune, n = 11; other, n = 21).
- Side (left, right).
- Ear tag insertion position (distal, central, proximal).
- Preservation method (<7 d at 4ºC , 2 to 4 wk in a freezer).

RESULTS



On average, ear tags were adequately inserted (36% distal, 24% central and 40% proximal) and ears broke longitudinally at 155 ± 9 N (9.8 N = 1 kgf). No ear tags broke or opened during the test.

Ear breaking force varied quadratically (R^2 = 0.99, P < 0.001) between 58 and 330 N, according to ear tag insertion position:
- Distal……103 ± 7 N
- Central…….136 ± 8 N
- Proximal.....213 ± 13 N

Breed (Lacaune > Manchega > other) but not side, sex or ear preservation method also affected (P > 0.05).

CONCLUSIONS

- Lamb ears broke before current commercial ear tags opened.
- Ear tag position was a key factor for ear breakage.
- For improving sheep welfare and ear tag retention, breed differences are requiring further study.