

## Changes in Shear Force after 3 weeks of carcass ageing of retail cuts from Bruna dels Pirineus breed

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**Introduction:** Due to the lack of tenderness, some retail cuts are used to produce ground products to improve marketability. The objective of this study was to report, for the first time, beef tenderness information of nine retail cuts of heifers from Bruna dels Pirineus breed, and to monitor their changes after 3 weeks of carcass aging.

**Material and method:** Nine cuts from 10 heifers ( $1.2 \pm 0.03$  years old; carcass weight  $125.5 \pm 1.56$ kg) from Bruna dels Pirineus breed were used to perform Warner-Bratzler shear force (WBSF) tests at 36h postmortem (pm; left side of the carcass) and after 3 weeks of carcass ageing (right side of the carcass). The right-side carcass was dry aged at  $1.2 \pm 0.35^\circ\text{C}$  and a relative humidity of  $68 \pm 4\%$ . At each sampling time carcasses were cut, and nine pieces were selected: topside, shoulder clod, sirloin cap, chuck roll, top blade, trip-trip, eye of round, mock tender, and outside round. For each cut, a piece of meat (2.5 cm wide) was sampled, vacuum packed and frozen at  $-20^\circ\text{C}$  until used for the WBSF test. Samples were defrosted for 24h at  $4^\circ\text{C}$  and cooked in the oven ( $200^\circ\text{C}$ ) until  $71^\circ\text{C}$  of core temperature was reached. Samples were cooled down and 6-8 cores were removed parallel to the muscle fibres and analysed with a texturometer. Data analysis was done using PROC MIXED procedure of SAS (1994). Differences were determined when  $P < 0.05$ .

**Results:** Results of this study showed that the nine pieces had a wide range of WBSF values at 36 h pm, and therefore, could be ranked and classified as tough, intermediate, tender or very tender as suggested by Belew et al. (2003). The non-aged pieces could be ranked as follows: TOUGH: eye of round (6.4kgf); chuck roll (5.7kgf); shoulder clod (5.2kgf); mock tender (5.1kgf), trip-trip (4.8kgf), outside round (4.8kgf) and topside (4.7kgf). INTERMEDIATE: sirloin cap (4.2kgf). TENDER: top blade (3.5kgf). All pieces had a significant decrease ( $P < 0.05$ ) of WBSF after 3-weeks of aging period. Ranking of the aged pieces: INTERMEDIATE: chuck roll (4.7kgf), eye of round (4.1kgf) and outside round (4.0kgf). TENDER: sirloin cap (3.7kgf), mock tender (3.7kgf), trip-trip (3.7kgf) and shoulder clod (3.6kgf). VERY TENDER: Topside (3.0kgf) and top blade (2.1kgf). According to the WBSF change, the eye of round and the shoulder clod showed the highest change whereas the pieces with less changes during the aging period were the outside round and the sirloin cap. Despite these good results from the meat quality point of view, it might be important to reach a compromise between the extension of carcass ageing and the tenderness of the meat, because excessive ageing might difficult the cutting process due to dried surfaces and might imply excessive trimming of external surfaces (low yield).

**Conclusions:** Aging the whole carcass is a good strategy to obtain good WBSF values of internal meat cuts and improve their marketability. The nine meat cuts from heifers of Bruna dels Pirineus showed a significant decrease on the shear force values after a 3-weeks of carcass aging. Despite these good shear force results, the extension of carcass aging should be optimized to avoid the excessive trimming of carcass surface.

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### Literature:

Belew, J. B., Brooks, J. C., McKenna, D. R., & Savell, J. W. (2003). Warner-Bratzler shear evaluations of 40 bovine muscles. *Meat Science*, 64(4), 507-512. doi: 10.1016/S0309-1740(02)00242-5