

Effects of pre-slaughter stress on meat quality characteristics of male lambs of *Hemsin* and *Of* sheep breeds

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1 ABSTRACT

Objective: This study was conducted to determine in meat quality traits in 6-month old) sheep breed lambs (Of (n=16) and Hemsin (n=16) which were exposed to pre-slaughter stress (PStr) and not (Cont).

Methods: Half of the lambs (n = 8) from each breed were randomly divided into two groups as pre-slaughter stress (PStr) and Control (Cont). Stress was created by huddling together lambs 9 hours before slaughter, which were previously housed in separate compartments not familiar with one another at the end of 60 days fattening period.

Results: Meat pH_{30min} and pH_{24hours} values in *longissimus thoracis et lumborum* (LTL) muscles of hot and cold carcass were influenced (6.22 vs 6.78 and 5.39 vs 5.86) significantly by stress, respectively. There were highly significant correlations between meat pH and quality traits such as cooking loss (R= -0.939, for both pH), water holding capacity (R= -0.924 and -0.892), Warner Bratzler Shear Force (WBSF, R=0.718 and 0.587) for pH_{30min} and pH_{24hours}, respectively. Colour brightness values including lightness (L*, 50.28 vs 40.24 and 49.04 vs 40.32), redness (a*, 18.43 vs 16.21 and 19.24 vs 16.66) and yellowness (b*, 18.43 vs 16.21 and 7.79 vs 8.76) of LTL muscle standard slices (fresh cut and after 45 minutes) were significantly influenced by pre-slaughter stress treatments. In addition, Chroma values (19.68 vs 18.23 and 20.77 vs 18.85) and hue angles (0.36 vs 0.47 and 0.39 vs 0.49), drip loss (2.37 vs 1.45), cooking loss (25.90 vs 27.84), water-holding capacity (WHC, 8.36 vs 7.50), instrumental tenderness (WBSF, 6.62 vs 8.82 kgf/cm², P<0.01), hardness (76.08 vs 86.73), adhesiveness (-0.05 vs -0.071) and chewiness (50.72 vs 64.47) were significantly affected by stress. It was concluded based on the present findings that stress caused by bringing together the animals that do not know each other and where a hierarchical social order has not been established influenced the meat quality traits and resulted in qualitative and quantitative losses (1.244 vs 1.725 kg).