THE EFFECT OF VACUUM COLD STORAGE ON THE QUALITY OF MEAT FROM POLISH HOLSTEIN-FRIESIAN BLACK-AND-WHITE HEIFERS AND LIMOUSIN CROSSES

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Abstract. The aims of this study were to determine changes in the physicochemical and sensory properties of vacuum-packaged cold-stored beef, and to compare the quality of meat from 11 Polish Holstein-Friesian Black-and-White (PHF BW) heifers and 11 crossbred heifers produced by mating PHF BW cows to Limousin (LIM) bulls (PHF BW x LIM). The experimental materials comprised samples of *m. longissimus lumborum* (MLL). Three samples of similar weight were collected from chilled right half-carcasses. The first sample was analyzed approximately 72 post mortem (before storage), the second and third samples were analyzed after 7 and 14 days of cold storage (0-2°C), respectively (counting from the day of slaughter). The samples were vacuum-packaged before storage.

During cold storage, muscle samples from PHF BW heifers and LIM crosses did not differ significantly with respect to chemical composition, physicochemical properties and sensory properties. Cold storage time affected the functional properties and eating quality of meat. Prolonged storage contributed to increased weight loss and water-holding capacity (shear force), an increase in color lightness (L^*) and a decrease in redness (a^*). Meat stored for 7 days was characterized by lower yellowness (b^*), compared with meat evaluated 72 hours post mortem and meat stored for 14 days. No significant changes in the pH of meat and no significant increase in TBARS values were noted. The taste, aroma, juiciness and tenderness of meat improved, and shear force values decreased throughout storage.

Keywords: beef, heifers, meat quality, cold storage, vacuum packaging