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Nutritional and physicochemical meat properties of wild boar (*Sus scrofa ferus*) x Duroc pig slaughtered to different live weights

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ABSTRACT

During the past few years, an increasing interest has been shown for wild and autochthonous pig, that can offer meat of high culinary, technological and health-promoting value. Production of hybrids (wild boar x swine) can be a valid way to give back some properties to pig meat, lost in commercial swine breeding. This study, conducted in a farm in Wronie (Poland), was designed to investigate the effects of slaughter weight and gender on nutritional and physicochemical meat properties derived from crossing the European wild boar (*Sus scrofa ferus*) with sows of Duroc breed. Twenty-six hybrids (16 barrows and 10 gilts) were reared in pens, housed according to sex, and were fed *ad libitum*, from a hog feeder, with a feed containing 12,5 MJ of EM/kg and 160g of CP/kg. Animals were slaughtered at two different live weights: 8 barrows and 5 gilts at 92,0 ± 4,2 kg and 8 barrows and 5 gilts at 108,1 ± 4,3 kg. Animals were electrically stunned; following exsanguination, the carcasses were dehaired and eviscerated. Live weight at slaughter and hot carcass weight were recorded and dressing percentage was calculated. *Longissimus dorsi* muscle was removed from the carcasses (after 24 h at 2 to 4 °C) and the following analyses were carried out: dry matter, protein, lipids, cholesterol, selected mineral (Ca, K, Mg and Na) and intramuscular collagen (IMC) properties (collagen and crosslink concentrations). Ca and Mg contents were determined with atomic absorption spectrometric method, while Na and K with atomic emission spectrometry. For IMC analyses, muscles were trimmed of fat and epimysium, lyophilized, and hydrolyzed in 6N HCl for determination of hydroxyproline and hydroxylysylpyridinoline (HLP) crosslinks, both of which are regarded as main connective tissue components influencing meat tenderness. ANOVA with GLM was performed using a 2x2 factorial design. Gender did not significantly affect carcass weight, dressing percentage and meat quality. As expected, the heavy animals had a higher ($P < 0.001$) carcass weight (83.6 vs 72.2 kg), but a similar dressing percentage (77.5 vs 78.4 %). The dry matter, lipid (1.95 vs 1.77 % of wet muscle), protein (23.15 vs 22.86 % of wet muscle) and cholesterol (72.10 vs 76.97 mg/100g of wet muscle) were not affected by weight at the slaughter. However, the meat of heavy animals contained more Mg (144.4 vs 107.2 mg/100g DM; $P < 0.05$) and K (1798.3 vs 1322.6 mg/100g DM; $P < 0.05$). Ca and Na were not significantly affected by live weight. It is interesting to note that Na values, ranging from 188.3 to 224.4 mg/100g DM, are over 50% lower if compared to pork Na values reported in literature. Collagen concentration and muscle HLP concentration (µg/mg) were not influenced by different weights. The degree of collagen maturation, expressed as HLP crosslink, tended to be higher in heavy hybrids (0.306 vs 0.230 mol HPL/mol collagen; $P < 0.07$) with a negative effect on meat tenderness, but with a positive effect from the technological point of view. Results from the present study suggest that K and Mg muscle content and IMC stability may be sensitive to different slaughter weight.