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Effect of housing system and genotype on rabbit meat quality

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<https://doi.org/10.17221/7343-CJAS>

Citation: Chodová D., Tůmová E., Martinec M., Bízková Z., Skřivanová V., Volek Z., Zita L. (2014): Effect of housing system and genotype on rabbit meat quality. Czech J. Anim. Sci., 59: 190-199.

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The effect of the housing system on the carcass characteristics, physical parameters of meat quality, fatty acid composition, and muscle fibre characteristics was studied in some Czech breeds. Ninety-six rabbits from seven different breeds of Czech genetic resources (Moravian Blue, Czech White, Czech Solver, Czech Spotted, Moravian White of Brown Eye, Czech Gold, and Czech Black Guard Hair) and one rabbit commercial hybrid (Hyplus), kept in two housing systems: intensive system (wire-net cages) or alternative (straw-bedded pen), were slaughtered at the age of 91 days. Alternatively housed rabbits had lower weight at slaughter, lower weight of loin, of hind legs meat, and of renal fat than rabbits from cages. The interactions between housing system and genotype were reflected significantly in pH value, and lightness and yellowness of biceps femoris. The highest ($P \leq 0.047$) pH was observed in Hyplus (6.68) from cages, while the lowest value was noted in Moravian White of Brown Eye (6.26). The significantly ($P \leq 0.010$) lightest meat was detected in Czech Solver (60.93) and the darkest in Czech Gold (47.81). Alternatively reared rabbits showed significantly ($P \leq 0.001$) lower monounsaturated fatty acids (MUFA) (26.63%) and higher ($P \leq 0.001$) polyunsaturated fatty acids (PUFA) (36.73%) contents than rabbits from cages (36.94% MUFA and 26.23% PUFA). The alternatively housed group had also higher n-3 and n-6 PUFA contents and higher PUFA : SFA ratio than the intensively housed one. Significant interactions ($P \leq 0.001$) were observed in cross sectional area (CSA), diameter, and perimeter of muscle fibres of type I. The largest ($P \leq 0.001$) CSA of type I muscle fibre had Czech Black Guard Hair from cages ($2573.1 \mu\text{m}^2$), while in pens this breed exhibited the smallest CSA ($1219.6 \mu\text{m}^2$), diameter ($38.68 \mu\text{m}$), and perimeter ($130.2 \mu\text{m}$). Fibre type distribution was not affected by any of the monitored parameters. The effect of interactions of the housing system and genotype was manifested mainly in physical and muscle fibre characteristics.

Keywords:

breed; carcass traits; fatty acids; muscle fibre characteristics

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IF (Web of Science)

2017: 0.955
5-Year Impact Factor: 1.01
Q3 (33/60) – Agriculture, E
Animal Science

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