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## The relation of *GH1*, *GHR* and *DGAT1* polymorphisms with estimated breeding values for milk production traits of German Holstein sires

E. Hradecká, J. Čítek, L. Panicke, V. Řehout, L. Hanusová

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We analysed the relations of estimated breeding values (EBV) of 315 German Holstein sires to their genotypes in growth hormone gene (*GH1*), growth hormone receptor gene (*GHR*) and acylCoA-diacylglycerol acyltransferase 1 (*DGAT1*). The strong relation of *DGAT1* K232A to the estimated breeding values for milk production traits has been confirmed, when allele *DGAT1*<sup>K</sup> was connected with higher milk fat yield, milk fat and milk protein content, while allele *DGAT1*<sup>A</sup> increased milk yield and milk protein yield. The effect of *DGAT1* genotype explained from 4.70% of variability of EBVs for fat yield to 31.90% of variability of EBVs for fat content. The evaluation of *GH1* 127 Leu/Val and *GHR* 257 SNP polymorphisms did not reveal an association of their polymorphism with EBVs for milk production traits, except the EBVs of *GHR*<sup>G</sup>/*GHR*<sup>G</sup> homozygotes for fat yield, which were significantly lower. The effect of *GH1* or *GHR* genotype explained only a negligible portion of variability of EBVs ( $R^2 < 1.00\%$  in most cases).

**Keywords:**

bovine; *GH1*; *GHR*; *DGAT1*; milk production; breeding value; Holstein

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