

## HOMA, QUICKI and RQUICKI in healthy Holstein-Friesian cows during early lactation

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HOMA, QUICKI and RQUICKI are indexes of insulin sensitivity that are founded on measurement of blood concentration of insulin and glucose. Insulin resistance is phenomenon, where biological effect of insulin is lower than normally. Subsequently production of insulin could be compensatory higher or the biological effect could be lower due to inadequate production of insulin in response to glucose stimulation. Insulin resistance mechanism potentially enables sufficient glucose to mammary gland, which utilises glucose independently of insulin.

Forty Holstein-Friesian cows, second or higher parity, with milk yield of 7000 kg in previous lactation and without any health issues in previous lactation were enrolled in the study. They were kept at a commercial dairy farm and fed TMR according to NRC 2001 recommendations. At the time of blood sampling their body condition score was 3 to 3.5 and they did not show any signs of disease. Blood samples were obtained from v. jugularis 3 to 7 days after calving. Insulin, glucose and beta hydroxy butyrate were measured in blood serum and HOMA, QUICKI and RQUICKI calculated. Mean, standard deviation and reference intervals of indexes of insulin sensitivity were calculated. Mean, standard deviation and reference interval of HOMA was  $18.5 \pm 4.1$  (10.172-26.978), QUICKI  $0.36 \pm 0.06$  (0.235-0.479) and RQUICKI  $0.51 \pm 0.1$  (0.296-0.722). Our results are to some degree comparable to results of other researchers, however there is some evidence that cows in different phases of lactation, with different energy balance and sick cows have different reference intervals of indexes of insulin sensitivity. Further studies clarifying these issues are necessary.

Table: Reference intervals for value of HOMA, QUICKI and RQUICKI in cows during early lactation

	Quantile		Limit	90% CI
HOMA	Lower	2.5%	10.172	8.348 to 11.996
	Upper	97.5%	26.978	25.154 to 28.802
QUICKI	Lower	2.5%	0.235	0.209 to 0.261
	Upper	97.5%	0.479	0.453 to 0.505
RQUICKI	Lower	2.5%	0.296	0.250 to 0.342
	Upper	97.5%	0.722	0.676 to 0.768

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