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TOWARDS CHARACTERIZING THE USEFULNESS OF SERUM ADIPOSECTIN CONCENTRATIONS TO ESTIMATE THE RISK FOR METABOLIC DISEASES IN DAIRY COWS

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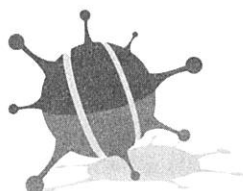
Adiponectin (AdipoQ) secreted from adipocytes, has been shown to be reduced in obesity, and in insulin resistant states in humans and rodents; its blood concentrations are inversely related to body weight. For dairy cows, impaired insulin regulation of energy metabolism is considered as etiologic key component for metabolic diseases typically occurring during the transition from pregnancy to lactation. Characterizing insulin sensitivity (IS) requires elaborate assessments and thus indirect biomarkers of IS might be advantageous. Studies about the AdipoQ serum concentrations in cattle have been impeded by the lack of valid assays but we have recently presented a species-specific ELISA that is comprehensively validated (Mielenz et al, DOI: 10.1016/j.domaniend.2012.10.004) and herein report the AdipoQ serum concentrations in dairy cows throughout an entire lactation cycle. Blood samples were collected at regular intervals from 11 pluriparous Holstein cows (control group of a feeding trial) from day -21 to day + 224 relative to calving (19 samples per cow). Starting with $32.5 \pm 1.9 \mu\text{g/mL}$ 3 weeks before calving, the AdipoQ concentrations reached a nadir ($20.0 \pm 1.1 \mu\text{g/mL}$) on the day of parturition and increased thereafter. Three weeks post partum the values had returned to the starting concentrations and steadily increased to reach maximal values at the end of the observation period ($40.8 \pm 2.6 \mu\text{g/mL}$). These results support a link between serum AdipoQ and the peripartal decrease in IS whereas the inverse relationship reported with body weight and body fat content, seems not applicable for the peripartal situation in the dairy cow.

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