

Mitocow - Effect of dietary L-carnitine supplementation on fat metabolism during transition period and clinical parameters after calving in dairy cows

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The dimension of negative energy balance during early lactation in dairy cows depends on the extent of changes of physiological parameters due to differently pronounced calving stress and associated metabolic and inflammatory responses, extent of fat mobilization and utilization in mitochondrial β -oxidation, in which L-carnitine is essential.

For the experiment, 59 pluriparous German Holstein cows were assigned to a control(CON) and carnitine(CAR) supplemented group (25g/d rumen-protected L-carnitine, Carneon 20 Rumin-Pro, Animal Nutrition). Experimental feeding started six weeks ante partum (ap) with a ration of 80% roughage and 20% concentrate. After calving the concentrate proportion was increased to 30% and continued increase to 50% within two weeks to reach the final proportion. Blood samples were taken regularly from day 42ap up to day 110post partum (pp) and clinical examinations were performed within the first 3 days pp.

A cumulative clinical score was calculated from 0.5h up to 72h pp and influenced by the interaction of group and time, which reached a maximal level at 1h pp in both groups. At day 3 and 1 ap blood triglycerides in CAR were significant higher than in CON, whereas non-esterified fatty acids and β -hydroxybutyrate were unaffected by carnitine but changed over time.

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