Table S1. Feed composition, average dry matter and energy content (mega-joule net-energy-lactation, MJ NEL), digestible protein (nXP, gram), and dry-matter content (DM, %), analyzed by a nutritional laboratory (Futtermittellabor Rosenau, Wieselburg, Austria) at the beginning of the study, after a new silo (grass, corn) was opened and at the end of the trial. Nutritional requirements for balanced nutrition (BAL) according to recommendations by the Bavarian Institute for Agriculture [31].

	Average dry matter and nutrient content		
Components	**DM %**	**MJ NEL/kg DM**	**g nXP/kg DM**
Corn silage	41.3	6.6	131.0
Gras silage	31.8	5.5	125.0
Hay	86.0	5.5	135.0
Wheat straw	88.0	3.7	39.0
Concentrate (Rindastar 39 XP1)	88.0	6.7	400.0
Requirements (cow/day) 2	DM kg	MJ NEL	g nXP
BAL (antepartum)3	11.6	67.3	1517.0
BAL (postpartum)4	20.5	125.5	3217.0

[1]39.0% XP = digestible protein (Schaumann GmBH & Co KG, Brunn am Gebirge, Austria)
[2]According Bavarian Institute for Agriculture [31]
[3]Required for maintenance per day, dry-off cow (3 weeks before calving), 700 kg liveweight
[4]Required for maintenance and 25 kg milk production (4.0% milk protein, 3.6% milk fat), 700 kg liveweight

Table S2. Mean (SD) concentration of metabolic and oxidative serum biomarkers at days 14 antepartum (ap), 14, and 28 postpartum of hyperketonemic (HYK) and control (CON) cows at day 7, 14, and 28 postpartum (status)

Sampling days	Status[1] day 7	Cholesterol [mmol/l]	Albumin [g/l]	Globulin [g/l]	A:G ratio	TP [g/l]	Vitamin A [µg/l]	LAI (SE)
Day 14 ap	CON	2.2 (0.4)	37.2 (2.0)	32.2 (4.3)	1.2 (0.2)	69.4 (4.5)	399 (67)	0.2 (2.4)
	HYK7	2.1 (0.3)	37.5 (2.0)	30.4 (4.8)	1.3 (0.3)	67.9 (4.7)	377 (54)	-0.3 (1.5)
Day 14	CON	2.8 (0.5)	37.0 (4.1)	32.0 (5.1)	1.2 (0.3)	68.9 (4.4)	344 (90)	0.1 (2.6)
	HYK7	3.7 (0.6)	37.0 (4.1)	31.9 (5.1)	1.2 (0.2)	71.4 (4.2)	396 (91)	0.1 (2.3)
Day 28	CON	3.7 (0.6)	37.0 (4.1)	31.9 (5.1)	1.2 (0.2)	71.4 (4.2)	396 (91)	0.1 (2.3)
	HYK7	3.8 (0.7)	38.3 (3.6)	32.5 (5.8)	1.2 (0.3)	70.8 (3.9)	390 (57)	-0.1 (2.0)
Sampling	**Status[1] day 14**	**Cholesterol [mmol/l]**	**Albumin [g/l]**	**Globulin [g/l]**	**A:G ratio**	**TP [g/l]**	**Vitamin A [µg/l]**	**LAI (SE)**
Day 14 ap	CON	2.1 (0.3)	37.2 (2.2)	32.1 (4.6)	1.2 (0.2)	69.4 (5.2)	395 (67)	0.1 (2.4)
	HYK14	2.2 (0.2)	37.4 (2.1)	30.4 (4.2)	1.3 (0.2)	67.7 (2.9)	378 (54)	-0.2 (1.7)
Day 14	CON	2.7 (0.5)	36.5 (4.2)	32.1 (5.21)	1.2 (0.3)	68.6 (4.5)	341 (90)	-0.02 (2.7)
	HYK14	2.7 (0.4)	38.1 (2.3)	30.7 (3.3)	1.3 (0.2)	68.8 (3.2)	345 (77)	0.05 (1.6)
Day 28	CON	3.8 (0.7)	38.6 (3.2)	33.3 (5.1)	1.2 (0.2)	72.1a (3.8)	392 (90)	0.1 (2.4)
	HYK14	3.7 (0.4)	37.6 (3.5)	31.7 (5.6)	1.2 (0.3)	69.2b (4.2)	410 (59)	-0.2 (1.6)
Sampling	**Status[1] day 28**	**Cholesterol [mmol/l]**	**Albumin [g/l]**	**Globulin [g/l]**	**A:G ratio**	**TP [g/l]**	**Vitamin A [µg/l]**	**LAI (SE)**
Day 14 ap	CON	2.2 (0.4)	37.4 (2.1)	32.4 (4.2)	1.2 (0.2)	69.8c (4.5)	399 (67)	0.3 (2.4)
	HYK28	2.2 (0.3)	37.0 (2.2)	30.1 (4.9)	1.3 (0.3)	67.1d (4.4)	377 (55)	-0.6 (1.6)
Day 14	CON	2.7 (0.6)	37.1 (3.9)	32.0 (4.4)	1.2 (0.2)	69.1 (4.4)	0.01 (2.74)	0.1 (2.8)
	HYK28	2.8 (0.3)	36.7 (3.5)	31.0 (5.3)	1.2 (0.3)	67.7 (3.3)	-0.03 (1.69)	-0.2 (1.5)
Day 28	CON	3.8 (0.7)	38.6 (3.4)	33.1 (5.2)	1.2 (0.2)	71.7 (4.2)	406 (89)	0.1 (2.5)
	HYK28	3.8 (0.5)	37.7 (3.0)	32.5 (5.6)	1.2 (0.3)	70.2 (3.9)	376 (63)	-0.2 (1.1)

[1]Status: Group (HYK, CON) according BHB-measurement

[a,b] Mean values in the same row with different superscripts differ ($P < 0.05$)

[c,d] Mean values in the same row with different superscripts differ ($P = 0.07$)

SD = Standard deviation, SE = Standard error, A:G ratio = Albumin/Globulin ratio; TP = Total protein; LAI = Liver activity index