

1 Comparison between two preventive treatments for hyperketonemia carried out
2 pre-partum: effects on non-esterified fatty acids, β -hydroxybutyrate and some
3 biochemical parameters during peripartum and early lactation

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 5 Massimo Morgante.

6 SUPPLEMENTARY FILE

7 Supplementary Table S1. Chemical composition of total mixed ratio (TMR) used for all
 8 animals during pre-partum and post-partum period

Dry - period		Lactation - period	
Chemical Composition	Percentage (%)	Chemical Composition	Percentage (%)
CP	9.22	CP	15.80
PD	/	PD	9.60
PDIN	6.18	PDIN	10.64
PDIE	6.92	PDIE	9.71
PDIA	2.59	PDIA	4.79
UIP%DM	25.04	UIP%DM	22.91
NDF	60.11	NDF	34.93
ADF	37.35	ADF	22.00
ADL	9.11	ADL	3.55
EE	2.61	EE	5.44
ASH	8.31	ASH	7.82
ST	9.60	ST	24.60
NSC	15.91	NSC	34.08

9 CP: Crude protein; PD: protein digestible; PDIN: protein digested in the small intestine
 10 when rumen-fermentable nitrogen is limiting; PDIE: protein digested in the small intestine
 11 when rumen-fermentable energy is limiting; PDIA: dietary protein undegraded in the
 12 rumen but truly digestible in the small intestine; UIP%DM: percentage of undegradable
 13 intake protein on dry matter; NDF: neutral detergent fiber; ADF: acid detergent fiber; ADL:
 14 acid detergent lignin; EE: ether extract; ASH: Ashes; ST: Starch; NSC: non-structural
 15 carbohydrates

16 Supplementary Table S2. Statistical effect of time in BCS, glucose, BHB, NEFA, triglycerides and TC serum concentrations
 17 obtained during the experimental period (21 ± 2 days pre-partum- 90 ± 2 days post-partum) in CTRL (control group), SUPP
 18 (group of cows treated with two combined supplementations containing acetyl-methionine, inositol, cyanocobalamin, l-alanine,
 19 l-arginine, l-threonine, l-glutamic acid and α -lipoic acid) and MON (group with cows treated with monensin).

		+90 \pm 2 vs					+50 \pm 2 vs				+25 \pm 2 vs			+7 \pm 2 vs		-7 \pm 2 vs
		-21 \pm 2	-7 \pm 2	+7 \pm 2	+25 \pm 2	+50 \pm 2	-21 \pm 2	-7 \pm 2	+7 \pm 2	+25 \pm 2	-21 \pm 2	-7 \pm 2	+7 \pm 2	-21 \pm 2	-7 \pm 2	-21 \pm 2
BCS	CTRL	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	-	P<0.001	-	P<0.001	-	P<0.01	P<0.001	P<0.001	P<0.001
	SUPP	-	P<0.001	P<0.001	P<0.001	-	-	P<0.001	P<0.001	P<0.001	P<0.001	-	P<0.001	P<0.001	P<0.001	P<0.01
	MON	P<0.001	-	-	P<0.01	P<0.001	P<0.001	P<0.001	-	-	P<0.001	P<0.001	-	P<0.001	P<0.001	P<0.001
Glucose	CTRL	P<0.001	P<0.001	P<0.001	P<0.001	-	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	-	P<0.001	P<0.001
	SUPP	P<0.001	P<0.001	P<0.001	-	P<0.01	P<0.001	P<0.001	-	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001
	MON	P<0.01	P<0.001	P<0.001	-	-	P<0.001	P<0.001	P<0.001	-	P<0.001	P<0.001	P<0.001	P<0.01	P<0.01	P<0.001
NEFA	CTRL	P<0.001	P<0.01	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001
	SUPP	-	P<0.01	P<0.001	P<0.001	-	P<0.001	-	P<0.001	P<0.001	P<0.05	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001
	MON	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001
BHB	CTRL	P<0.001	-	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001
	SUPP	P<0.001	P<0.001	P<0.001	P<0.001	-	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	-
	MON	P<0.001	P<0.001	-	-	-	P<0.001	P<0.001	-	-	P<0.001	P<0.001	-	P<0.001	P<0.001	-
Triglycerides	CTRL	P<0.001	P<0.001	-	P<0.001	-	P<0.001	P<0.001	P<0.05	-	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001
	SUPP	P<0.001	P<0.001	P<0.01	P<0.001	P<0.001	P<0.001	P<0.001	P<0.05	-	P<0.001	P<0.001	P<0.01	P<0.001	P<0.001	P<0.001
	MON	P<0.001	P<0.001	-	P<0.001	P<0.01	P<0.001	P<0.001	-	-	P<0.001	P<0.001	P<0.05	P<0.001	P<0.001	P<0.05
TC	CTRL	P<0.05	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001
	SUPP	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	-	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001
	MON	P<0.001	P<0.001	P<0.001	P<0.001	P<0.05	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001

21 Supplementary Table S3. Statistical effect of time in ALT, AST, GGT and TB serum concentrations obtained during the
 22 experimental period (21 ± 2 days pre-partum- 90 ± 2 days post-partum) in CTRL (control group), SUPP (group of cows treated
 23 with two combined supplementations containing acetyl-methionine, inositol, cyanocobalamin, l-alanine, l-arginine, l-threonine,
 24 l-glutamic acid and α -lipoic acid) and MON (group with cows treated with monensin).

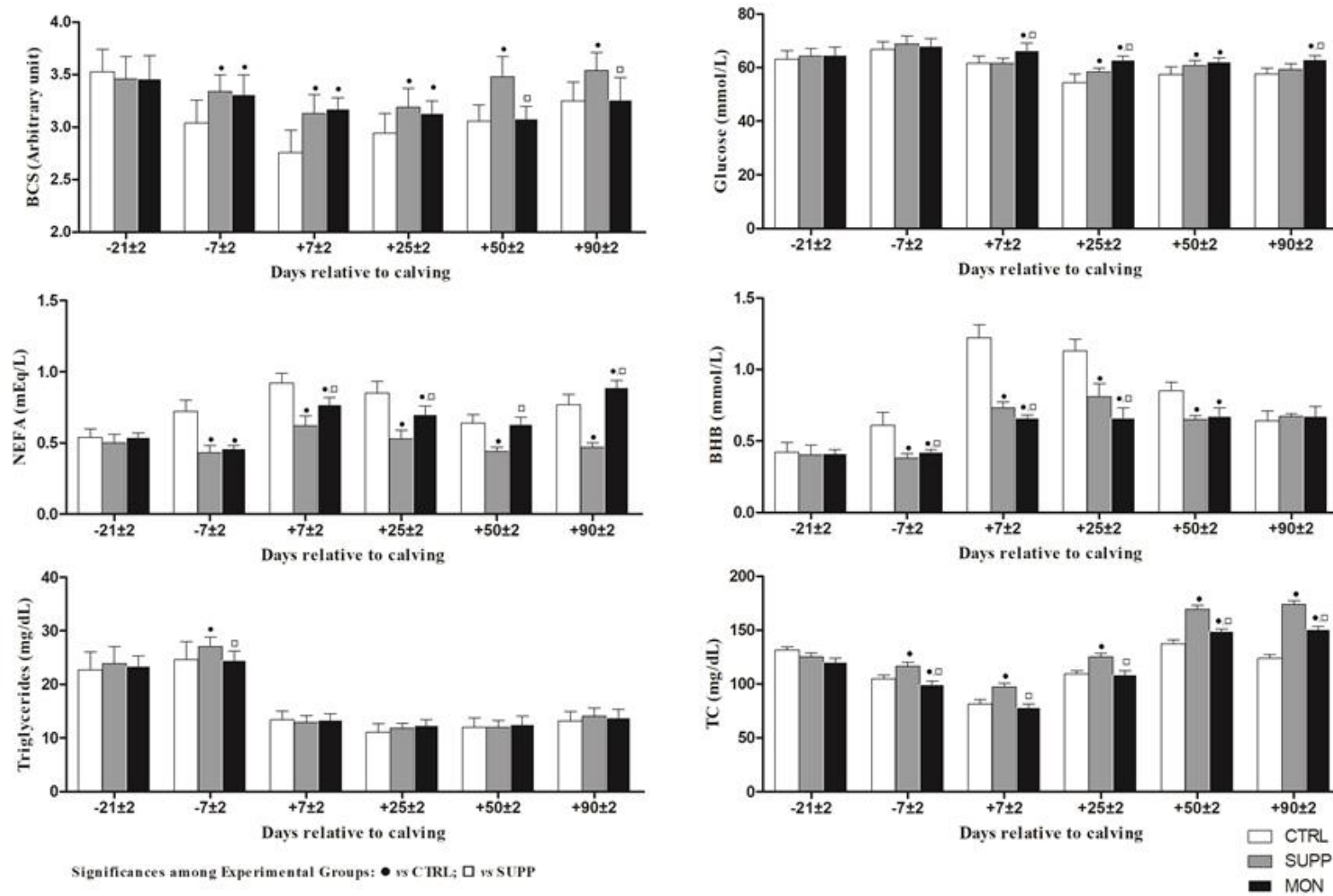
		+90 \pm 2 vs					+50 \pm 2 vs				+25 \pm 2 vs			+7 \pm 2 vs		-7 \pm 2 vs
		-21 \pm 2	-7 \pm 2	+7 \pm 2	+25 \pm 2	+50 \pm 2	-21 \pm 2	-7 \pm 2	+7 \pm 2	+25 \pm 2	-21 \pm 2	-7 \pm 2	+7 \pm 2	-21 \pm 2	-7 \pm 2	-21 \pm 2
ALT	CTRL	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	-	P<0.05	-	-	-	-
	SUPP	P<0.01	P<0.001	P<0.001	P<0.001	-	P<0.01	P<0.001	P<0.001	P<0.001	P<0.05	-	P<0.01	P<0.001	P<0.01	P<0.05
	MON	P<0.001	P<0.001	P<0.001	P<0.001	-	P<0.001	P<0.001	P<0.001	P<0.001	-	-	P<0.001	P<0.01	P<0.05	-
AST	CTRL	-	P<0.01	P<0.001	P<0.001	P<0.001	P<0.001	-	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.05
	SUPP	-	P<0.001	P<0.001	-	P<0.01	P<0.01	P<0.001	P<0.001	P<0.001	-	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001
	MON	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001
GGT	CTRL	P<0.001	P<0.001	P<0.001	P<0.001	-	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	-	P<0.01
	SUPP	P<0.001	P<0.001	P<0.001	-	-	P<0.001	P<0.001	P<0.001	-	P<0.001	P<0.001	P<0.001	P<0.001	-	P<0.001
	MON	P<0.001	P<0.001	P<0.001	P<0.001	P<0.01	P<0.001	P<0.001	P<0.001	P<0.001	-	P<0.001	P<0.01	P<0.01	-	P<0.001
TB	CTRL	P<0.001	P<0.001	P<0.001	P<0.001	P<0.05	P<0.001	P<0.001	P<0.001	P<0.001	-	P<0.001	P<0.001	P<0.001	P<0.001	P<0.01
	SUPP	-	P<0.05	P<0.001	P<0.001	P<0.05	P<0.001	P<0.001	P<0.001	-	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	-
	MON	-	-	P<0.001	P<0.001	P<0.01	-	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.01

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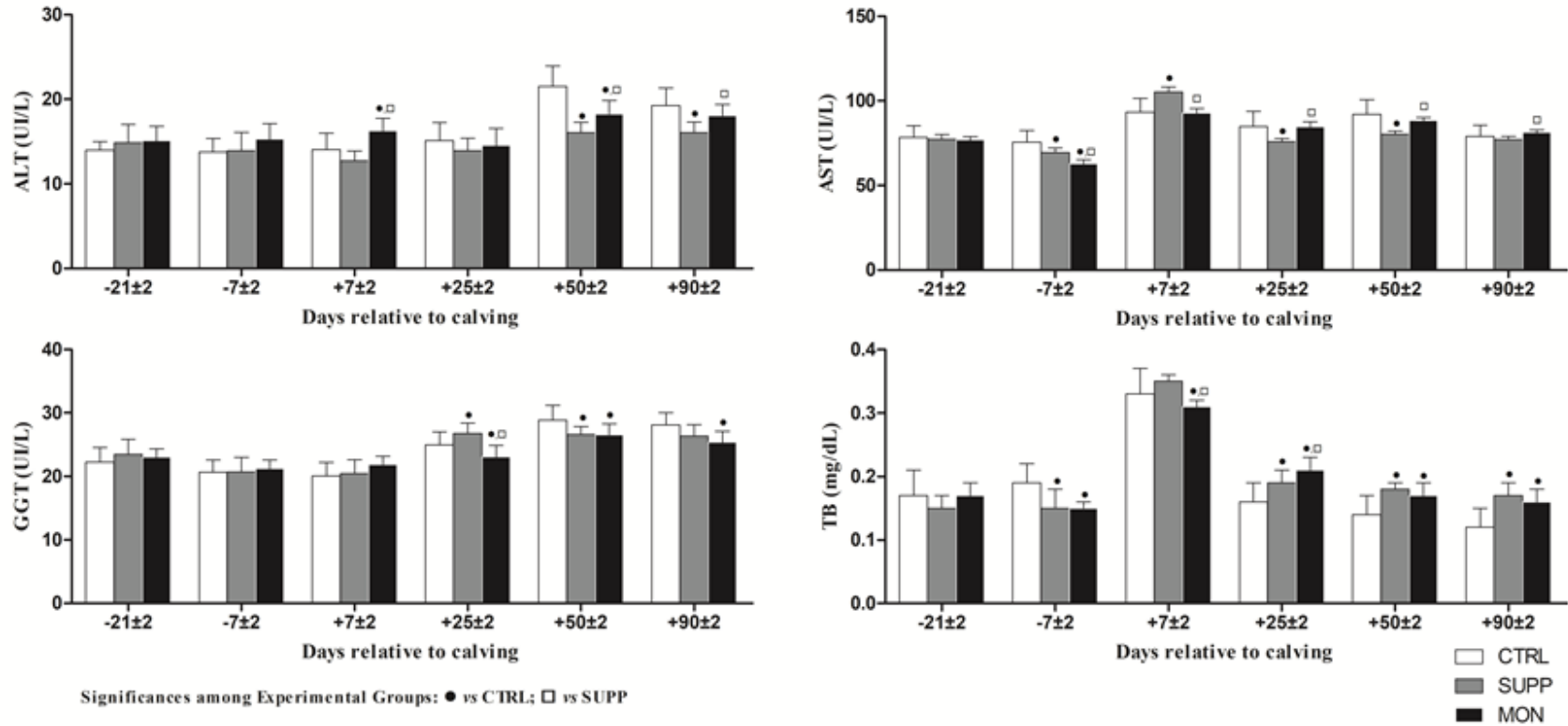
26 Supplementary Table S4. Statistical effect of time in TP, albumin, globulins and urea serum concentrations obtained during the
 27 experimental period (21 ± 2 days pre-partum- 90 ± 2 days post-partum) in CTRL (control group), SUPP (group of cows treated
 28 with two combined supplementations containing acetyl-methionine, inositol, cyanocobalamin, l-alanine, l-arginine, l-threonine,
 29 l-glutamic acid and α -lipoic acid) and MON (group with cows treated with monensin).

		+90±2 vs					+50±2 vs					+25±2 vs			+7±2 vs		-7±2 vs
		-21±2	-7±2	+7±2	+25±2	+50±2	-21±2	-7±2	+7±2	+25±2	-21±2	-7±2	+7±2	-21±2	-7±2	-21±2	
TP	CTRL	P<0.001	P<0.001	P<0.001	P<0.001	-	P<0.001	P<0.001	P<0.001	P<0.001	P<0.01	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	
	SUPP	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.05	P<0.001	P<0.001	-	-	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	
	MON	P<0.01	P<0.001	P<0.001	P<0.001	P<0.05	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	-	P<0.001	P<0.001	P<0.001	P<0.001	
Albumin	CTRL	-	-	P<0.001	P<0.001	-	-	-	P<0.001	P<0.001	P<0.001	P<0.001	-	P<0.001	P<0.001	-	
	SUPP	-	P<0.05	P<0.001	P<0.001	P<0.05	-	-	P<0.001	P<0.001	P<0.001	P<0.001	-	P<0.001	P<0.001	-	
	MON	-	-	P<0.001	P<0.001	-	-	-	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	-	
Globulins	CTRL	P<0.001	P<0.001	P<0.001	P<0.001	-	P<0.001	P<0.001	P<0.001	P<0.001	-	P<0.001	P<0.001	P<0.001	-	P<0.001	
	SUPP	P<0.001	P<0.001	P<0.001	-	P<0.01	P<0.05	P<0.001	P<0.001	P<0.05	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	-	
	MON	P<0.01	P<0.001	P<0.001	P<0.001	-	P<0.001	P<0.001	P<0.001	P<0.001	-	P<0.01	P<0.001	P<0.001	P<0.01	P<0.001	
Urea	CTRL	P<0.001	P<0.001	P<0.001	P<0.001	-	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	-	P<0.001	P<0.001	-	
	SUPP	P<0.001	P<0.001	P<0.001	-	P<0.001	P<0.001	P<0.001	-	P<0.01	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	
	MON	P<0.001	P<0.001	P<0.001	P<0.01	P<0.05	P<0.001	P<0.001	P<0.001	-	P<0.001	P<0.001	P<0.001	P<0.001	P<0.01	P<0.001	

Supplementary Figure S1 Mean \pm standard deviations (\pm SD) of BCS, glucose, BHB, NEFA, triglycerides and TC serum concentration, together with statistical effect of treatment, obtained during the experimental period (21 ± 2 days pre-partum- 90 ± 2 days post-partum) in CTRL (control group), SUPP (group of cows treated with two combined supplementations containing acetyl-methionine, inositol, cyanocobalamin, l-alanine, l-arginine, l-threonine, l-glutamic acid and α -lipoic acid) and MON (group with cows treated with monensin).



Supplementary Figure S2 Mean \pm standard deviations (\pm SD) of ALT, AST, GGT and TB serum concentration, together with statistical effect of treatment, obtained during the experimental period (21 ± 2 days pre-partum- 90 ± 2 days post-partum) in CTRL (control group), SUPP (group of cows treated with two combined supplementations containing acetyl-methionine, inositol, cyanocobalamin, l-alanine, l-arginine, l-threonine, l-glutamic acid and α -lipoic acid) and MON (group with cows treated with monensin).



Supplementary Figure S3 Mean \pm standard deviations (\pm SD) of TP, albumin, globulins and urea serum concentration, together with statistical effect of treatment, obtained during the experimental period (21 ± 2 days pre-partum- 90 ± 2 days post-partum) in CTRL (control group), SUPP (group of cows treated with two combined supplementations containing acetyl-methionine, inositol, cyanocobalamin, l-alanine, l-arginine, l-threonine, l-glutamic acid and α -lipoic acid) and MON (group with cows treated with monensin).

