Ultrasonographic measurement of liver, portal vein, hepatic vein and perivisceral adipose tissue in high-yielding dairy cows with fatty liver during the transition period

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SUPPLEMENTARY FILE

Supplementary Table S1. Feed ingredients and chemical composition (%DM) of the total mixed ratio (TMR) administered in steaming-up and subsequent early lactation.

Total mixed ratio (TMR)	**Pre-partum**	**Post-partum**
Feed basis (Kg/animal)	20.40	25.10
Dry Matter (DM) (Kg/animal)	11.74	19.86
Dry Matter Intake (DMI) (Kg/animal)	11.14	19.60
Chemical composition (%)	**Pre-partum**	**Post-partum**
Crude protein	13.42	16.83
Ethereal extract	4.27	5.89
Neutral detergent fiber	41.12	30.10
Acid detergent fiber	25.96	20.35
Non Fiber Carbohydrates	34.28	38.06
Starch	14.87	27.99

Supplementary Table S2. Coefficients of correlation between serum NEFA and BHB concentration and liver ultrasonographic parameters calculated in healthy and sick groups. Significant correlations ($P < 0.05$) are indicated in bold letters.

Healthy Group							
	NEFA	**BHB**	**DL**	**TPAT**	**DPAT**	**PVD**	**DPV**
NEFA		**r=0.9133**	r=-0.1112	**r=0.3900**	r=0.0324	**r=0.5946**	r=0.2582
		P=0.000	P=0.452	**P=0.006**	P=0.827	**P=0.000**	P=0.076
BHB	**r=0.9133**		r=-0.1179	**r=0.3060**	r=-0.0019	**r=0.4493**	r=0.2013
	P=0.000		P=0.425	**P=0.034**	P=0.990	**P=0.001**	P=0.170
DL	r=-0.1112	r=-0.1179		r=0.1629	**r=0.9433**	r=-0.1082	**r=0.6163**
	P=0.452	P=0.425		P=0.269	**P=0.000**	P=0.464	**P=0.000**
TPAT	**r=0.3900**	**r=0.3060**	r=0.1629		**r=0.4810**	**r=0.5058**	**r=0.3201**
	P=0.006	**P=0.034**	P=0.269		**P=0.001**	**P=0.000**	**P=0.027**
DPAT	r=0.0324	r=-0.0019	**r=0.9433**	**r=0.4810**		r=0.0740	**r=0.6553**
	P=0.827	P=0.990	**P=0.000**	**P=0.001**		P=0.617	**P=0.000**
PVD	**r=0.5946**	**r=0.4493**	r=-0.1082	**r=0.5058**	r=0.0740		r=0.2375
	P=0.000	**P=0.001**	P=0.464	**P=0.000**	P=0.617		P=0.104
DPV	r=0.2582	r=0.2013	**r=0.6163**	**r=0.3201**	**r=0.6553**	r=0.2375	
	P=0.076	P=0.170	**P=0.000**	**P=0.027**	**p=0.000**	P=0.104	
Sick Group							
	NEFA	**BHB**	**DL**	**TPAT**	**DPAT**	**PVD**	**DPV**
NEFA		**r=0.9366**	r=0.1590	**r=0.4503**	**r=0.2949**	**r=0.7737**	**r=0.2904**
		P=0.000	P=0.182	**P=0.000**	**P=0.012**	**P=0.000**	**P=0.013**
BHB	**r=0.9366**		r=0.1389	**r=0.3833**	**r=0.2541**	**r=0.7181**	**r=0.2532**
	P=0.000		P=0.245	**P=0.001**	**P=0.031**	**P=0.000**	**P=0.032**
DL	r=0.1590	r=0.1389		r=0.2238	**r=0.9397**	r=0.1537	**r=0.4612**
	P=0.182	P=0.245		P=0.059	**P=0.000**	P=0.197	**P=0.000**
TPAT	**r=0.4503**	**r=0.3833**	r=0.2238		**r=0.5438**	**r=0.5100**	r=0.2088
	P=0.000	**P=0.001**	P=0.059		**P=0.000**	**P=0.000**	P=0.078
DPAT	**r=0.2949**	**r=0.2541**	**r=0.9397**	**r=0.5438**		**r=0.3114**	**r=0.4704**
	P=0.012	**P=0.031**	**P=0.000**	**P=0.000**		**P=0.008**	**P=0.000**
PVD	**r=0.7737**	**r=0.7181**	r=0.1537	**r=0.5100**	**r=0.3114**		r=0.1347
	P=0.000	**P=0.000**	P=0.197	**P=0.000**	**P=0.008**		P=0.259
DPV	**r=0.2904**	**r=0.2532**	**r=0.4612**	r=0.2088	**r=0.4704**	r=0.1347	
	P=0.013	**P=0.032**	**P=0.000**	P=0.078	**P=0.000**	P=0.259	

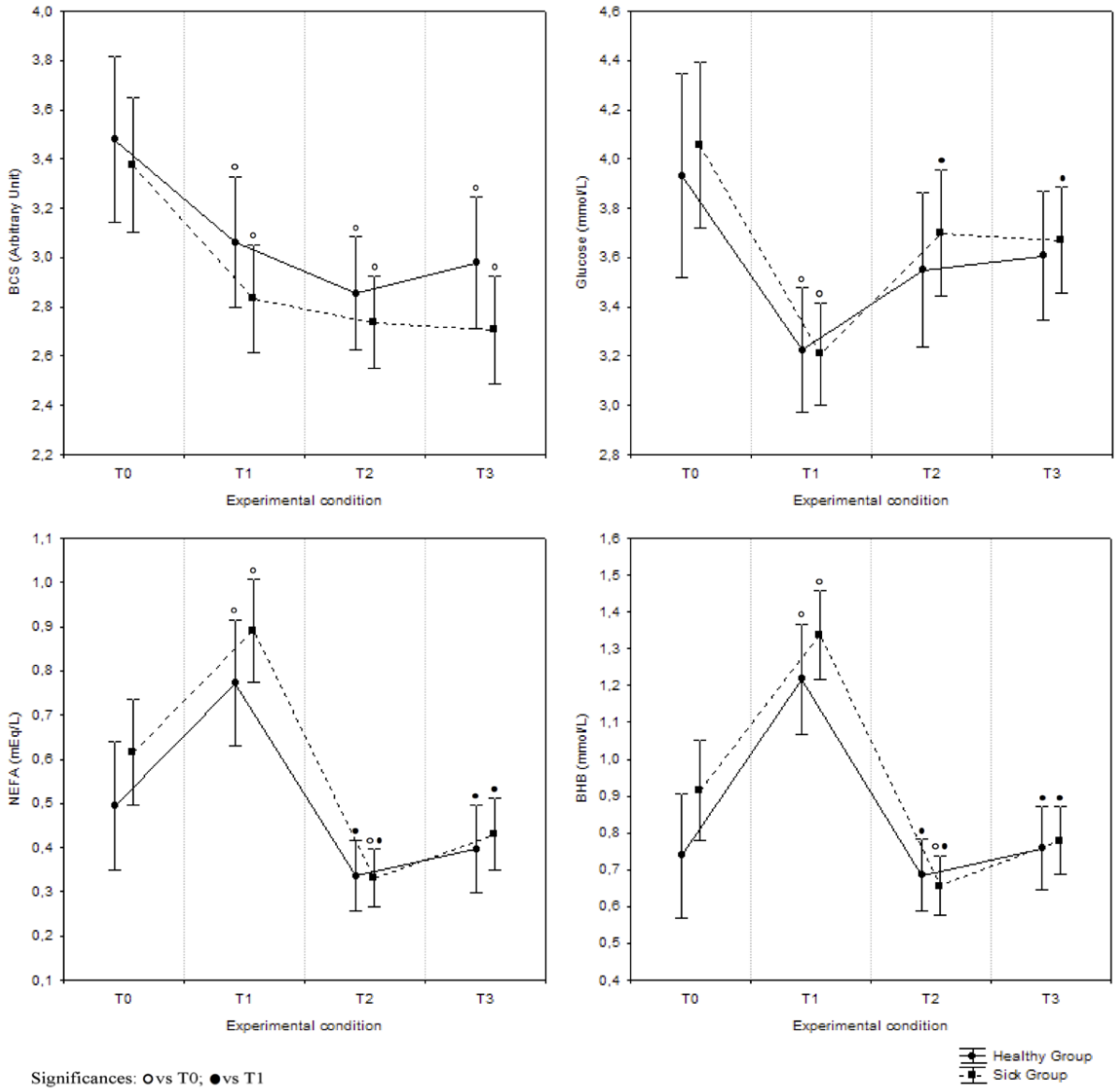
NEFA: non-esterified fatty acids; BHB: β-hydroxybutyrate; DL: depth of the liver; TPAT: thickness of perivisceral adipose tissue; DPAT; depth of perivisceral adipose tissue; PVD: portal vein diameter, DPV: depth of the portal vein.

Supplementary figure legends

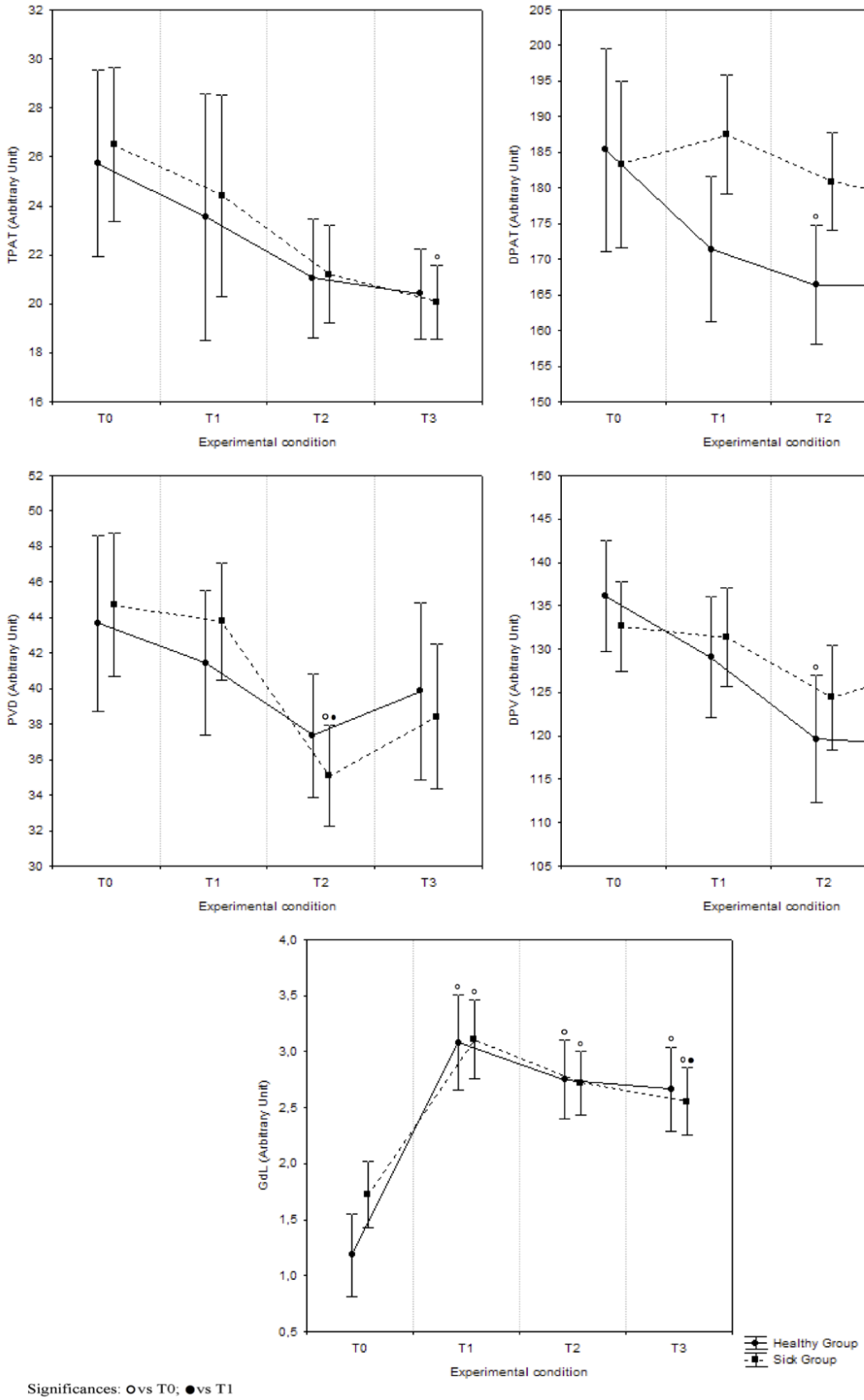
Supplementary Fig. S1 Mean ± standard deviations (±SD) of the body condition score (BCS), Glucose, non-esterified fatty acids (NEFA) and β-hydroxybutyrate (BHB) with the statistical significances (P<0.005) obtained during the experimental period (T0-T3) in healthy group and sick group.

Supplementary Fig. S2 Mean ± standard deviations (±SD) of the thickness of perivisceral adipose tissue (TPAT), depth of perivisceral adipose tissue (DPAT), portal vein diameter (PVD), depth of the portal vein (DPV) and Grades der Leberverfettung (GdL) with the statistical significances (P<0.005) obtained during the experimental period (T0-T3) in healthy group and sick group.

Supplementary Fig. S3 Histological grades of hepatic lipidosis varied from GdL 1 to GdL 3. CV: central veins. Stain, H&E. Bars 100 μm. A: Cloudy swelling in the cytoplasm of the hepatocytes in GdL 1 (arrows). B: Some small vacuoles around the central vein in GdL 2 (arrows). C: Small and moderately sized vacuoles in the hepatocytes in GdL 3 (arrows). CV: central vein (HE bars 100 μm).

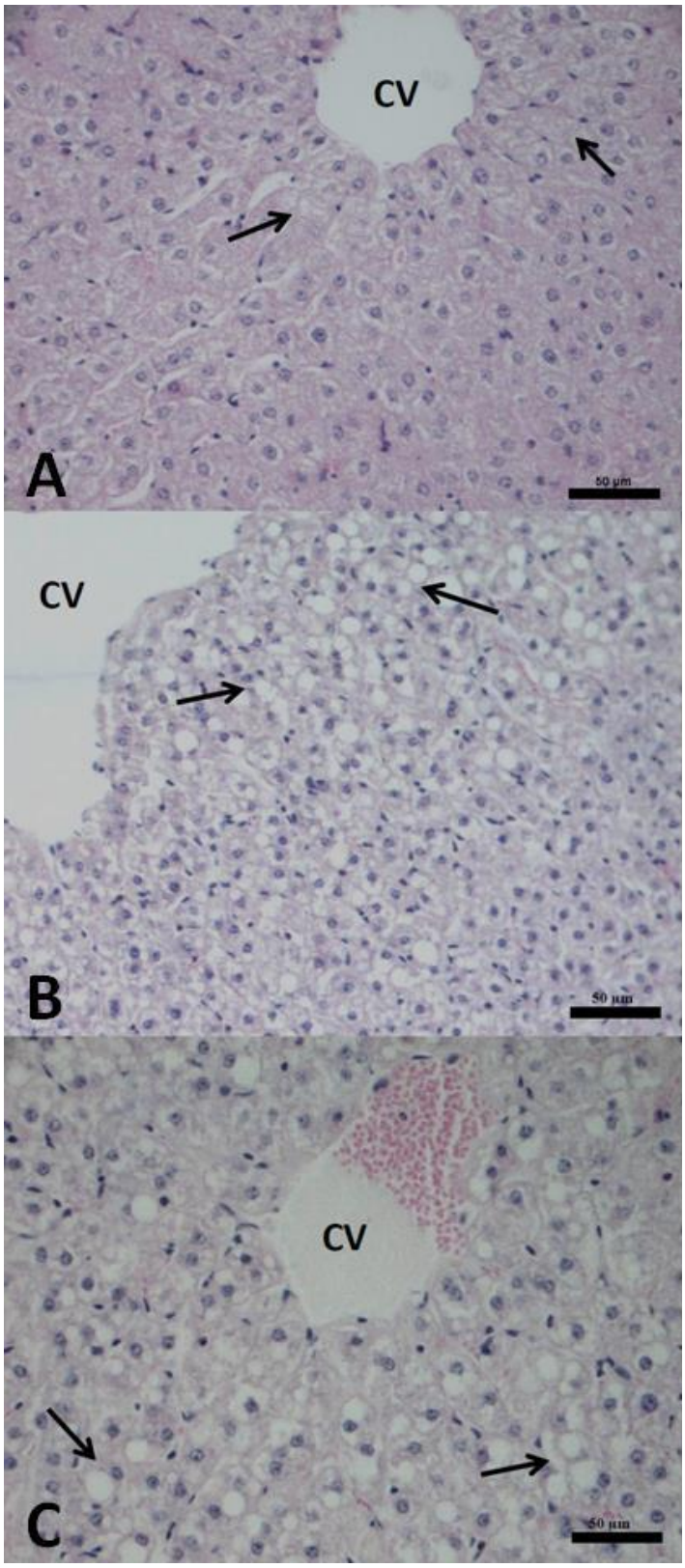


Supplementary Fig. S1



Significances: ○vs T0; ●vs T1

Supplementary Fig. S2



Supplementary Fig. S3