

Table S1. Individual plasma free fatty acids concentration in mice fed control and high-fat diet. Values are mean \pm SD (n = 6 per group); a-p < 0.05 vs. LFD; significance by unpaired t-test.

	C14:0	C16:0	C16:1	C18:0	C18:1	C18:2	C20:0	C20:2	C20:4	C22:0	C22:6	C24:0	C24:1
LFD	7.12 \pm 1.45	71.60 \pm 9.36	6.26 \pm 1.70	29.98 \pm 2.67	70.29 \pm 7.91	59.06 \pm 9.76	1.14 \pm 0.18	2.28 \pm 0.37	9.36 \pm 1.63	3.83 \pm 0.30	1.65 \pm 0.23	4.11 \pm 1.04	0.16 \pm 0.02
HFD	16.74 \pm 1.23 ^a	92.80 \pm 10.81 ^a	5.38 \pm 0.48	61.09 \pm 4.42 ^a	141.12 \pm 6.96 ^a	138.35 \pm 6.90 ^a	4.07 \pm 0.39 ^a	2.61 \pm 0.16	19.44 \pm 1.14 ^a	11.28 \pm 0.79 ^a	2.22 \pm 0.19 ^a	8.21 \pm 0.58 ^a	0.38 \pm 0.07 ^a

Table S2. Impact of CerS1 and CerS5 gene silencing on the content of individual **long-chain acyl-carnitines** in mouse gastrocnemius muscle. Values are mean pmol/mg of tissue \pm SD; n=8 per group; a -p<0.05 vs LFD; b -p<0.05 vs HFD.

	C14:0-carnitine	C16:0-carnitine	C18:1-carnitine	C18:0-carnitine
LFD	1.47 \pm 0.18	2.46 \pm 0.22	6.94 \pm 0.54	0.72 \pm 0.09
HFD	1.19 \pm 0.18 ^a	2.93 \pm 0.33	7.31 \pm 0.51	1.23 \pm 0.14 ^a
HFD(- CerS1)	1.45 \pm 0.06 ^b	3.08 \pm 0.35 ^a	7.93 \pm 1.01	1.44 \pm 0.21 ^{ab}
HFD(- CerS5)	1.48 \pm 0.06 ^b	3.46 \pm 0.49 ^{ab}	7.97 \pm 1.03	1.31 \pm 0.09 ^a

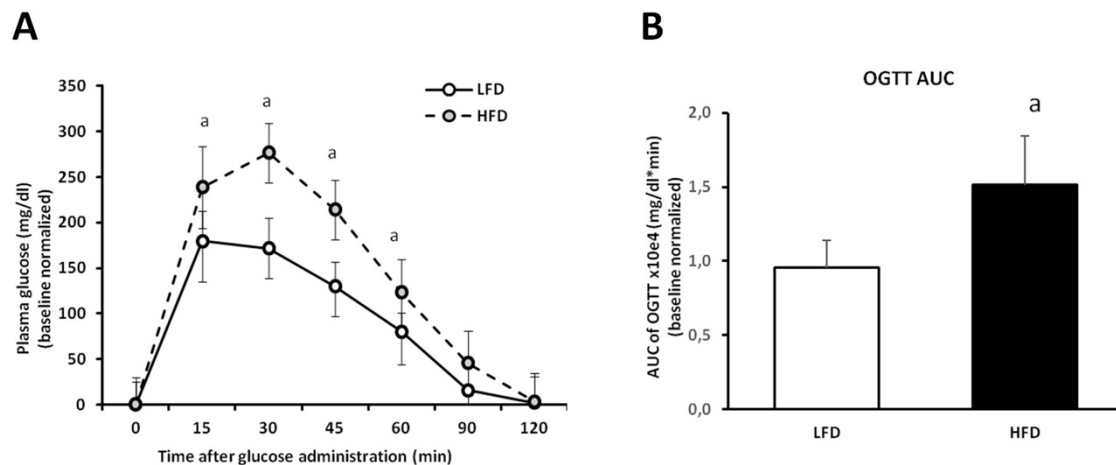


Figure S1. Impact of high-fat diet (HFD) consumption on baseline normalized plasma glucose profile during oral glucose tolerance test (OGTT). Panel A— baseline normalized plasma glucose profile during OGTT; Panel B— area under the baseline-normalized plasma glucose curve (AUC) for OGTT; Values are mean \pm SD (n = 6 per group); * $-p < 0.05$ vs. LFD; significance by unpaired t-test.

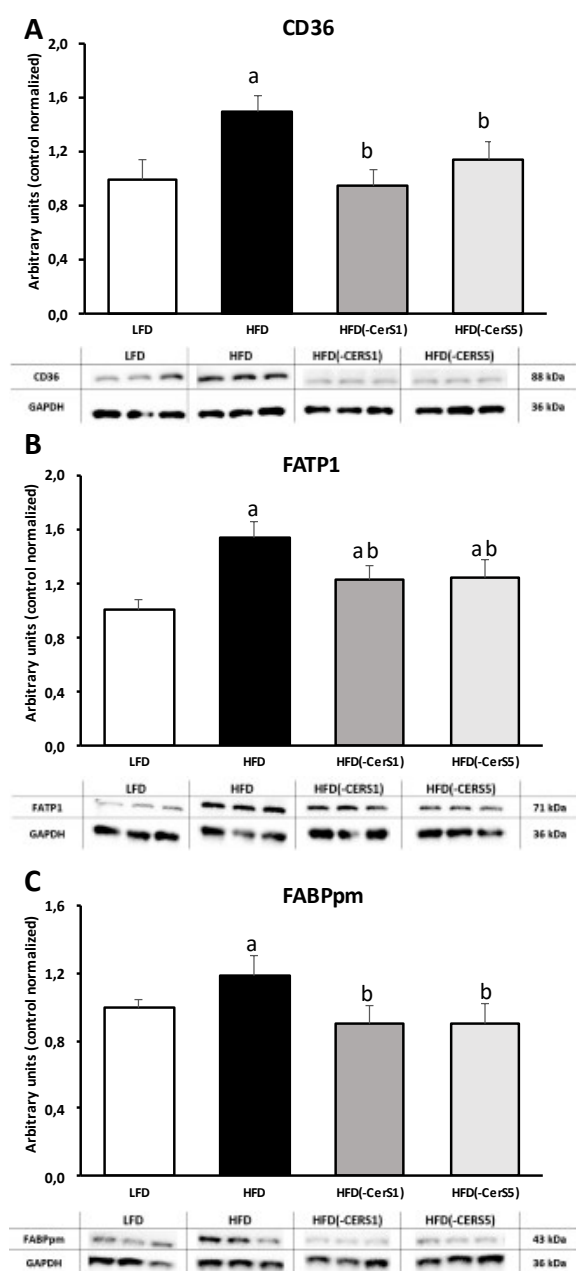


Figure S2. The impact of CerS1 and CerS5 silencing on the protein expression of fatty acid transporters in gastrocnemius muscle of high-fat diet mice. Panel A-protein expression of CD36; Panel B-protein expression of FATP1; Panel C-protein expression of FABPpm. Values are mean \pm SD n=8 per group; a – $p < 0.05$ vs LFD; b – $p < 0.05$ vs HFD; significance by ANOVA; LFD-low-fat diet, HFD—high-fat diet. * The observed molecular weight of indicated proteins is different to the theoretical one, as stated by the antibody manufacturer.