

Figure S1. Effect of LTA on nutrient metabolism-related indicators in rats kept in a normal temperature.

Effect of LTA on serum ALT (A) and AST (B) activity, and on blood glucose (C), LDL-C (D), HDL-C (E), TC (F), TG (G), TP (H), Alb (I), BUN (J) level. Content of hepatic glycogen (K), serum Cor (L), insulin (M), NEFA (N) in rats treated with LTA. Effect of LTA on the content of ACC (O), CPT-1 (P), FAS (Q), Gpa (R) and PEPCK (S) in rats liver. All data are expressed as the mean ± SEM (n=8). Statistical significance was determined using Student's t-tests. * $p < 0.05$; ** $p < 0.01$, and ns for not significant.

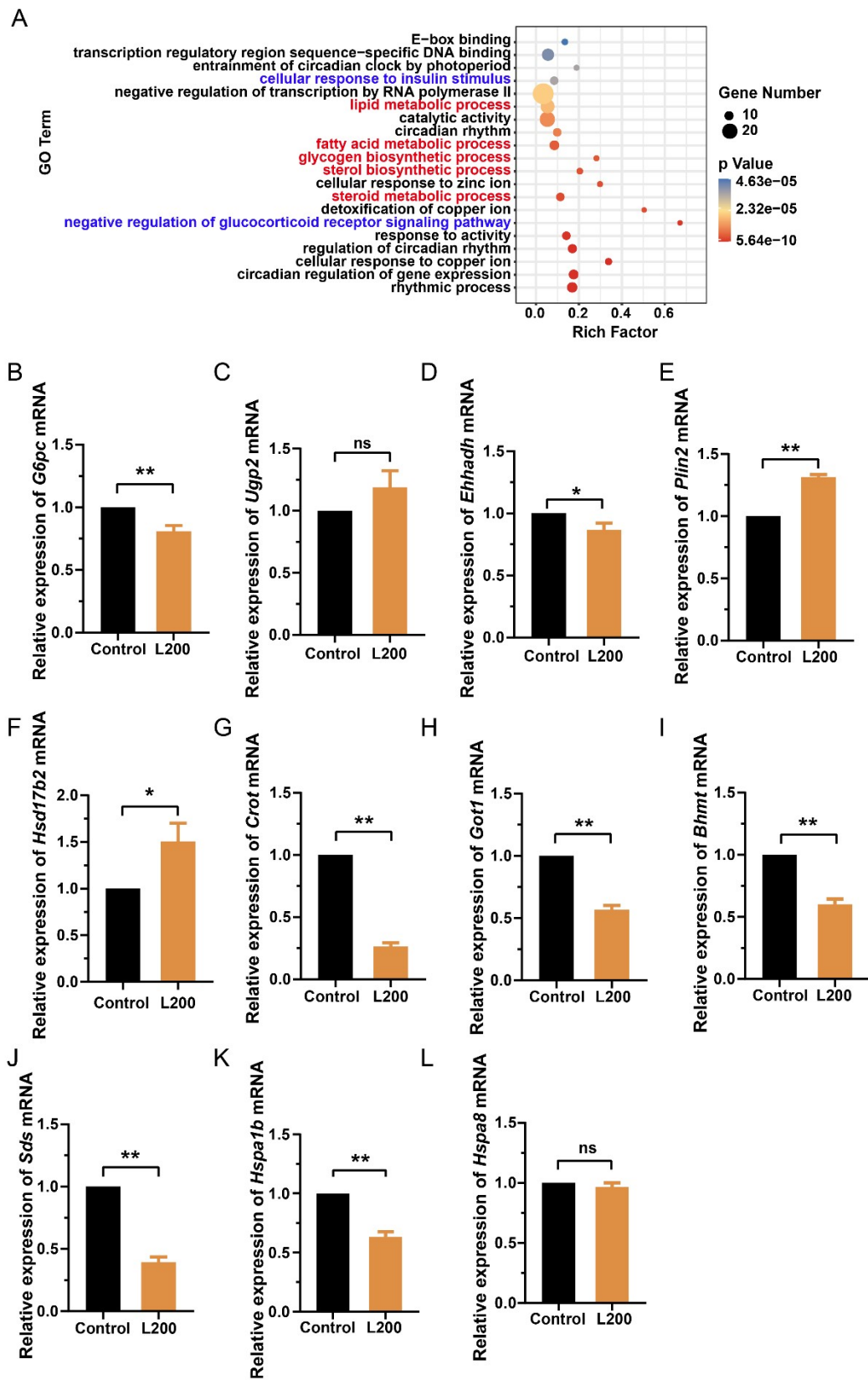


Figure S2. LTA affects the expression of genes related to carbohydrate, lipid and protein metabolism in rats exposed to HS

(A) GO analysis of DEGs respond to LTA under HS. **(B-L)** Effect of LTA on the expression

of genes related to carbohydrate metabolism (**B, C**), lipid metabolism (**D-G**), AA metabolism (**H-J**), and heat shock protein genes (**K, L**) in healthy rats. All data are expressed as the mean \pm SEM (n=8 for **B-L**). Student's t-tests was used to determine the significance. * $p < 0.05$; ** $p < 0.01$, and ns for not significant.

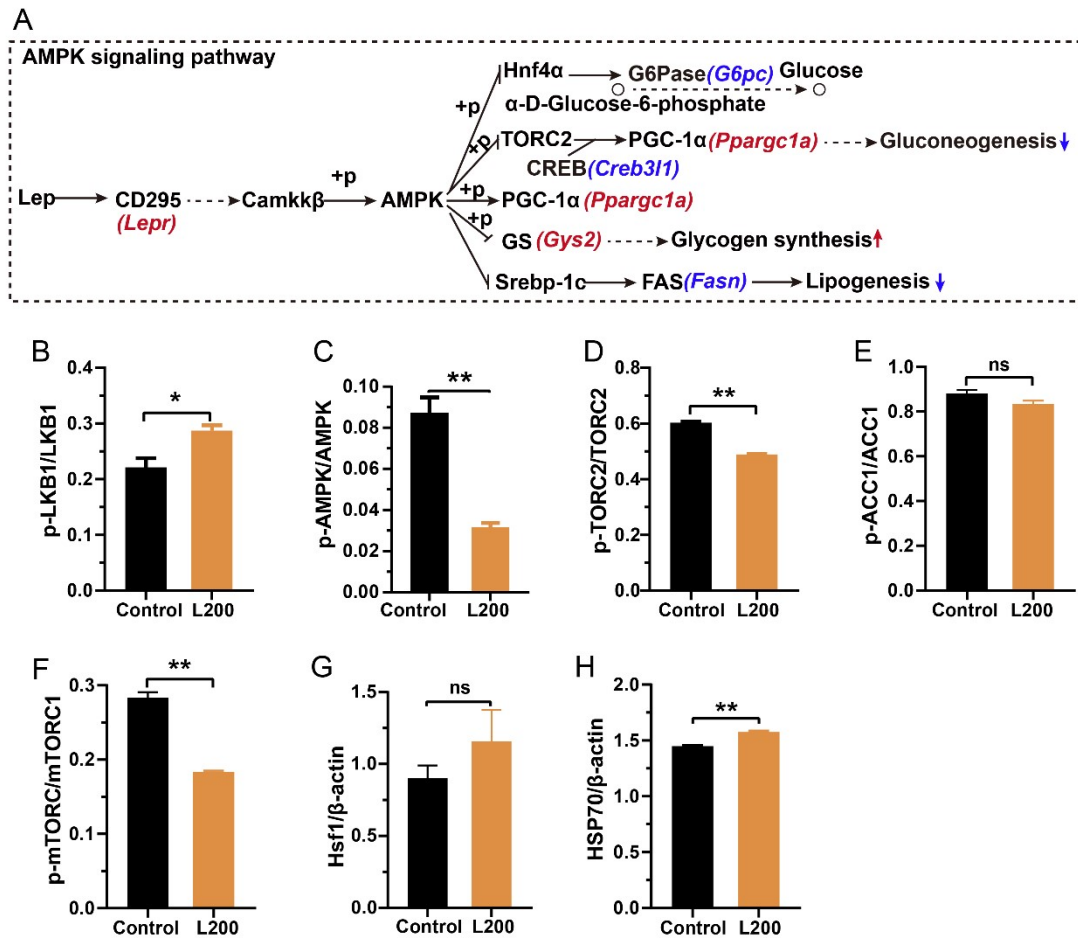


Figure S3. LTA regulated carbohydrates and lipid metabolism in heat-stressed rats via AMPK signaling pathway

Effect of LTA on the DEGs enrich in AMPK signaling pathway (**A**) in heat-stressed rats. DEGs marked in red indicates up-regulated, and those marked in blue indicates down-regulated. Effect of LTA on the phosphorylation of LKB1 (**B**), AMPK (**C**), TORC2 (**D**), ACC1 (**E**), mTORC1 (**F**), and expression of Hsf1 (**G**) and Hsp70 (**H**) proteins in healthy rats. All data are expressed as the mean \pm SEM ($n=8$ for **B-H**). Statistical significance was determined using Student's t-tests. * $p < 0.05$; ** $p < 0.01$, and ns for not significant.

Table S1. Primers used in this study

Name	Sense(F)	Anti-sense(R')
<i>β-actin</i>	CCAACCGTGAAAAGATGACCCAGA	CGACCAGAGGCATACAGGGACAA
<i>G6pc</i>	CAATCTCCTCTGGGTGGCAGTG	CCACCAATACGGGCGCTGT
<i>Ugp2</i>	CACGGGCAGACGTAAAGGGTG	ACGTGTGCTTTGGGCACCTG
<i>Ehhadh</i>	TGTGTCCGCTCAATCCAGGC	GACGGGTTGAGCAGAGGCTGTT
<i>Plin2</i>	TCCCAGCTCCACTCCACTGTCC	ACTCGTCCGTGTCGTCTAGCC
<i>Hsd17b2</i>	CCATACGCAGAAGCTCGCCC	GCACAAATGGCGTGCTGGAT
<i>Crot</i>	GAAGAGTGGTGGCTCAATGTCGC	GCTTCCTCTTTCCAAGTACTGAGTGCC
<i>Sds</i>	CGCTGCCGTCAAGGAAGGAA	CCACAGTGTTACACCCAAGGC
<i>Got1</i>	CATCGCCGACCTGGGAGAAC	GCACAGGCGTGGAGGACAAA
<i>Bhmt</i>	CGGCAGCTTCATCGGGAGTT	CTCTGCCACGTAGTTCCCTCGG
<i>Hspa1b</i>	GCTTTCCTTGATGGTGGCTCA	TCATCTCCGAGTTCACACACTGGG
<i>Hspa8</i>	GGCTTAGATAAGAAGGTTGGGGCTG	CTGGGTGCTGGAGGAGGTGTG

Table S2. Original data related to Figure 3 (n = 8)

Indexes	Control	HS	L200	LL200+HS
ALT activity (U.L ⁻¹)	9.18±1.03	13.27±2.20	9.88±1.85	11.35±2.55
AST activity (U.L ⁻¹)	10.39±1.11	23.07±3.80	15.63±2.79	21.25±2.97
Glucose level (mmol.L ⁻¹)	5.74±0.19	3.61±0.10	5.56±0.16	4.75±0.10
LDL-C level (mmol.L ⁻¹)	0.69±0.04	1.23±0.13	1.03±0.04	0.88±0.02
HDL-C level (mmol.L ⁻¹)	2.27±0.23	2.07±0.13	2.55±0.16	2.12±0.27
TC level (mmol.L ⁻¹)	1.39±0.07	1.95±0.06	1.61±0.07	1.85±0.05
TG level (mmol.L ⁻¹)	0.82±0.05	0.86±0.05	0.68±0.06	0.81±0.04
TP content (gprot.L ⁻¹)	58.41±2.72	50.09±0.89	59.72±4.02	61.71±1.79
Alb content (g.L ⁻¹)	30.87±1.12	23.16±0.47	31.64±0.80	27.89±0.48
BUN level (mmol.L ⁻¹)	5.28±0.10	9.30±0.36	5.45±0.13	6.17±0.22
Hepatic glycogen (mg.g ⁻¹)	11.50±0.23	5.91±0.58	7.73±0.75	7.42±0.47
Cor level (ng.mL ⁻¹)	46.54±8.00	89.63±11.64	42.35±10.18	52.73±9.02
Insulin level (U.mL ⁻¹)	99052.29±8966.05	103238.97±7252.52	131112.43±3726.65	121775.92±5902.97
NEFA level (mmol.L ⁻¹)	0.88±0.09	0.68±0.04	0.68±0.04	0.78±0.10
ACC content (ng.mL ⁻¹)	0.56±0.23	0.41±0.05	0.44±0.06	0.53±0.06
CPT-1 content (ng.mL ⁻¹)	5.28±1.63	5.70±0.97	6.19±1.03	6.55±0.96
FAS content (ng.mL ⁻¹)	57.43±26.20	34.43±4.36	35.40±4.31	40.29±4.68
Gpa content (nmol.min ⁻¹ .mgprot ⁻¹)	39.72±4.06	34.78±0.84	32.04±0.86	30.35±0.76
PEPCK content (ng.mL ⁻¹)	1108.92±307.30	1367.21±139.46	1219.78±94.49	1430.98±169.73

Statistics are expressed as Mean ± SEM.

Table S3. Original data related to Figure 4 (n = 8)

Genes	Control	HS	L200	LL200+HS
<i>G6pc</i>	1.00±0.00	1.27±0.11	0.81±0.05	0.41±0.02
<i>Ugp2</i>	1.00±0.00	1.41±0.11	1.19±0.13	2.52±0.15
<i>Ehhadh</i>	1.00±0.00	1.43±0.09	0.87±0.05	0.67±0.07
<i>Plin2</i>	1.00±0.00	1.45±0.01	1.31±0.02	0.55±0.08
<i>Hsd17b2</i>	1.00±0.00	0.90±0.03	1.51±0.20	13.06±1.25
<i>Crot</i>	1.00±0.00	0.25±0.01	0.26±0.03	0.13±0.02
<i>Got1</i>	1.00±0.00	1.53±0.11	0.57±0.03	1.42±0.22
<i>Bhmt</i>	1.00±0.00	1.88±0.19	0.60±0.04	1.60±0.24
<i>Sds</i>	1.00±0.00	2.56±0.28	0.39±0.04	5.42±0.91
<i>Hspa1b</i>	1.00±0.00	1.02±0.15	0.63±0.04	0.69±0.13
<i>Hspa8</i>	1.00±0.00	1.26 ±0.01	0.97±0.03	1.12±0.11

Statistics are expressed as Mean ± SEM.

Table S4 Original data related to Figure 6 (n = 8)

Proteins	Control	HS	L200	LL200+HS
p-LKB1/LKB1	0.22±0.017	0.21±0.007	0.29±0.01	0.38±0.017
p-AMPK/AMPK	0.09±0.01	0.02±0.01	0.03±0.01	0.05±0.01
p-TORC2/TORC2	0.60±0.003	0.55±0.005	0.49±0.002	0.62±0.003
p-ACC1/ACC1	0.80±0.014	0.88±0.015	0.83±0.016	0.69±0.008
p-mTORC1/mTORC1	0.28±0.007	0.17±0.007	0.18±0.002	0.31±0.009
Hsf1/ β -actin	0.90±0.09	1.46±0.02	1.16±0.22	1.14±0.35
Hsp70/ β -actin	1.45±0.001	1.72±0.004	1.58±0.004	1.61±0.001

Statistics are expressed as Mean \pm SEM.