

Table S1 The Data related to the Holstein cattle sample

Sample	Cowshed temperature(Td) /°C	Cowshed Relative humidity(RH)/%	Temperature and humidity index (THI)	Rectal temperature /°C	Average breathing rate (Times/min)
Ctr-1	11	56	53.30	38.1	47±2.03
Ctr-2	12	53	54.74	38.5	53±2.10
Ctr-3	12	53	54.74	38.5	58±1.89
Ctr-4	11	56	53.30	38.4	52±1.78
Ctr-5	11	56	53.30	38.3	56±2.58
HS-1	28	81	79.85	39.7	106±2.65
HS-2	27	79	77.99	39.8	96±2.00
HS-3	29	79	81.17	40.5	102±2.08
HS-4	29	77	80.89	40.3	108±2.65
HS-5	30	83	83.38	40.2	112±1.53

$$\text{THI}=0.81\text{Td}+(0.99\text{Td}-14.3)\text{RH}+46.3$$

Table S2 The primer sequences for siRNA

Genes	Primer Sequences (5'-3')
si-SIRT4	F: GGAGAGUUGCUGCCAUUAATT
	R: UUAAUGGCAGCAACUCUCCTT
Negative control	F: UUCUCCGAACGUGUCACGUTT
	R: ACGUGACACGUUCGGAGAATT

Table S3 The primer sequences for real-time PCR

Genes	Primer Sequences (5'-3')
MFN1	F: TGTTTTGGTCGCAAACCTCTG
	R: CTGTCTGCGTACGTCTTCCA
MFN2	F: CGTCAAGAAGGATAAGCGACAC
	R: TCTGACCACTTCTTACCG
OPA1	F: AAGAGGCACTTCAAGGTCG
	R: GGGAGGAGGAAGAGCAGA
Drp1	F: TCTCCGAGTCCTTTATTG
	R: TGCTGTTGAAGTCGCAGGAG
GLUT1	F: GTGCTCCTGGTTCTGTTTCTTCA
	R: GCCAGAAGCAATCTCATCGAA
CSN2	F: TCTGCCTCTGCTCCAGTCTT
	R: AGGAGGGGGCATTCACTTT
ELF5	F: GTGGCATCAAGAGTCAAGACTGTC
	R: CTCAGCTTCTCGTACGTCATCCTG
SREBP1	F: TGGACCAGGCAAGAGAAGAG
	R: TCTTCCTCCAGCTTGACAGG
β -Actin	F: TCACCAACTGGGACGACA
	R: GCATACAGGGACAGCACA