

Table S1 Required consumables

Equipment and consumables	Supplier
-80°C Refrigerator	Haier Bio-Medical Company
ELIASA	Megu Molecular Instrument Co., LTD
Upright microscope	Olympus China Co., LTD
Tissue dehydrator	Leica Trading Co. LTD
Microtome	Leica Trading Co. LTD
Paraffin embedding machine	Matsu Medical Electronic Technology Company
Glucometer	Roche Diagnostics in Germany
ELISA kit	Jiangsu Enzyme Free Co. LTD
Biochemical index kit	Nanjing Institute of Construction
Hematoxylin eosin	Reagan Biotechnology
Thermo Real Time PCR	Thermo Fisher Technology Co. LTD
FT-PCR instrument	Roche Diagnostic Products Co. LTD
Mini-PROTEAN® Tetra Electrophoresis bath	BioRad
Gel imager instrument	BioRad
Reverse transcription kit	TaKaRa Bio
PCR kit(Polymerase chain reaction kit)	TaKaRa Bio
RNAiso Plus solution	TaKaRa Bio
LightCycler® 480 Multiwell Plate 384	Roche Diagnostic Products Co. LTD
Radio-Immunoprecipitation Assay Lysis Buffer	Meilun Biotechnology Co. LTD
BCA(Bicinchoninic Acid Assay) protein concentration quantitative kit	Biyuntian Biotechnology Co., LTD
Block Buffer	Shanghai Biyuntian Biotechnology Co. LTD
rColorcode Prestained Protein Marker	Thermo-Fisher Co., LTD
ECL luminescent solution	Meilun Biotechnology Co. LTD
PVDF(Polyvinylidene fluoride) membrane	Millipore

Table S2 Primer information

Sequencing region	Primer name	Sequence information
V3+V4	806R	GGACTACHVGGGTWTCTA

Table S3 GC-MS information

Item	Argument
Sample size	2 $\mu$ L
Front Inlet Mode	1:1
Carrier Gas	Helium
Column	DB-FFAP (30m x 0.25mm x 0.25 $\mu$ m)
Column Flow	1.2 mL/min
Oven Temperature Ramp	Heat at 90 $^{\circ}$ C for 1 minute, heat up to 100 $^{\circ}$ C at a rate of 25 $^{\circ}$ C /minute, then heat up to 150 $^{\circ}$ C at a rate of 20 $^{\circ}$ C /minute, heat up to 200 $^{\circ}$ C at a rate of 25 $^{\circ}$ C /minute, heat up for 0.5 minutes, run for 3 minutes
Front Injection Temperature	200 $^{\circ}$ C
Transfer Line Temperature	23 $^{\circ}$ C
Ion Source Temperature	230 $^{\circ}$ C
Quad Temperature	150 $^{\circ}$ C
Electron Energy	70eV
Scan Mode	dMRM
Solvent Delay	3.0min

Table S4 Antibody information

Antibody name	Manufacturer	Dilution ratio
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AKT	Protein tech	1: 1000
p-AKT	Cell Signaling Technology	1: 1000
mTOR	ZEN-BIOSCIENCE	1: 500
p-mTOR	Cell Signaling Technology	1: 1000
PI3K	Cell Signaling Technology	1: 1000
S6K	Abcam	1: 2000
p-S6K	Cell Signaling Technology	1: 2000
Lipin-1	Abcam	1: 1000
SREBP1c	Abcam	1: 1000
ACC	Abcam	1: 1000
FAS	Abcam	1: 1000
SCD-1	Abcam	1: 1000
UCP1	Abcam	1: 1000
PGC-1 $\alpha$	Protein tech	1: 1000
GADPH	Protein tech	1: 2500

Table S5 Primer sequences

Gene	Forward primer	Reverse primer
ACC	GGCCAGTGCTATGCTGAGAT	AGGGTCAAGTGCTGCTCCA
UCP1	GTGAAGGTCAGAATGCAAGC	AGGGCCCCCTTCATGAGGTC
PGC-1 $\alpha$	GTCGGAAGACACCTTCCTCTC	AGAGCAGCACACTGGTTGG
FAS	GGGAAGCCCATCACCATCTTC	AGAGGGGCCATCCACAGTCT

GADPH	AGGTCGGTGTGAACGGATTG	TGTAGACCATGTAGTTGAGGTCA
IL-10	GCTGTCATCGATTTCTCCCCT	GACACCTTGGTCTTGGAGCTTAT
IL-1 $\beta$	TGCCACCTTTTGACAGTGATG	TGATGTGCTGCTGCGAGATT
IL-6	GACAAAGCCAGAGTCCTTCAGA	TGTGACTCCAGCTTATCTCTTGG
AKT	GCCGCCTGATCAAGTTCTCC	TTCAGATGATCCATGCGGGG
mTOR	GCATAACAGATCCTGACCCTGAT	TTCAGAGCCACAAACAGAGC
SCD1	TTCTTACACGACCACCACCA	CAGCCGAGCCTTGTAAGTTC
SREBP1c	GGAGCCATGGATTGCACATT	GGCCCGGAAGTCACTGT
TNF- $\alpha$	GATCGGTCCCCAAAGGGATG	CCACTTGGTGGTTTGTGAGTG
PI3K	TTATATAGAAATGGATCCACCAGCA	TTCATTCACTTCTCCCTTGAGA
S6K	GAGCTGGAGGAGGGGG	ACAATGTTCCATGCCAAGTTCA
Lipin-1	TGCTCGTGAATCCTCTTGAACA	CCTGCGTGAAGACACTGACC
$\beta$ -actin	GGATGCAGAAGGAGATCACTG	CGATCCACACGGAGTACTTG

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