Supplementary Table 2 Summary of animal and cell experiments concerning the therapeutic effects cinnamon on CVDs and diabetes.

CVDs	Effects	Experimental model	Species	Materials	Dose	Duration	Targets	Ref.
Atherosclerosis	Endothelium protection	Isolated rat aortic rings pre-treatmented with KCl	*C. zeylanicum*	*C. zeylanicum* aqueous extract	1-700 μg/ml	-	NO↑, BP↓	70
		Isolated rat thoracic aorta	NR	Cinnamaldehyde	1-100 μM	-	NO↑	71
		Isolated rat aorta	NR	Cinnamaldehyde	1 μM-1 mM	-	Ca2+↓	72
		Human umbilical vein endothelial cells (HUVECs)	NR	Eugenol	12.5-100 μM	2 h	eNOS↑, ROS↓	73
		Endothelium of mouse aortas treated with high glucose	NR	Cinnamaldehyde	10 μM	24 h	NO↑, Nrf2↑	74
	Hypolipidemic effect	high fat diet-fed rats	NR	cinnamic acid	30 mg/kg/day	7 weeks	TC↓, LDL-C↓, HDL-C↑	87
		healthy male Wistar albino rats	*C. zeylanicum*	Aqueous extract solution of *C. zeylanicum*	250 mg/kg, 500 mg/kg	12 days	HDL-C↑, LDL↓, VLDL↓, TG↓, TC↓	88
		Six-week-old male ICR mice	*C. osmophloeum* ct. linalool	S-(+)-linalool	500 mg/kg/day	14 days	TG↓	89
		Adult male Wistar rats	*C. zeylanicum*	Aqueous extract of *C. zeylanicum*	400 mg/kg/day	25 days	SREBP1c↓, SREBP2↓, HMG-CoAR↓, ACAT1↓, DGAT2↓	90

3T3-L1 white adipocytes and activated HIB1B brown adipocytes	NR	Trans-cinnamic acid	100 μM	6–8 days	C/EBPα↓, PPARγ↓, β3-AR↑, PKA↑, pHSL↑, AMPK↑, ATGL↑	91
Differentiated 3T3-L1 cells	NR	Trans-cinnamic acid	80, 250, 750 μM	5 h	AMPK↑	92
Male C57BL/Ks db/db mice	NR	Cinnamon bark extract	200 mg/kg/d body weight	12 weeks	PPARα↑, PPARγ↑	93
Mature 3T3-L1 adipocytes	*Cinnamomi Cassiae* extract (Cinnamon bark: Lauraceae)	Cinnamaldehyde	5 mg/kg body weight	14 weeks	HSL↑, PLIN↓, GPD↓, PPARγ↓, C/EBPα↓	94
Adipose tissue of fructose-fed rats	NR	Cinnulin PF	50 mg/kg/day	8 weeks	ADIPOQ↑, CD36↓	95
Enterocytes isolated from fructose-fed hamsters	NR	Cinnulin PF (a water-soluble cinnamon extract)	50 mg/kg body weight	2 h	IR↑, IRS1↑, IRS2↑, Akt1 mRNA↑, MTP↓, SREBP1c↓	98
Primary enterocytes of chow-fed rats	NR	Aqueous cinnamon extract, Cinnulin PF	10 or 100 mg/mL	0.5, 2, and 4 h	Abcg5↓, Npc1l1↓, Cd36↓, Mttp↓, SREBP1c↓, Abca1↓	99
Adult male zebrafish	*C. zeylanicum*	Cinnamon powder	2mg, thrice a day	4 weeks	SREBF1↑, SREBF2↑, FOXO1↑, LDLR↑, PPARAB, PPAR-γ	100

	High-cholesterol diet (HCD)-fed rabbits	NR	Cinnamaldehyde	10 mg/kg/day	4 weeks	TC↓, TG↓, LDL-C↓, CETP↓	29
	Mouse RAW264.7 macrophage cell	NR	4-Hydroxycinnamic acid (L-phenylalanine methyl ester) amide; 3,4-dihydroxyhydrocinnamic acid (L-aspartic acid dibenzyl ester) amide	-	-	ACAT-1↓, ACAT-2↓	102
	HFD-fed rats	*C. zeylanicum*	Cinnamon polyphenol	100 mg/kg/d body weight	12 weeks	SREBP-1c↓, LXRs↓, ACLY↓, FAS↓, PPAR-α↑, NF-*κ*B p65↓, IRS1↑, Nrf2↑, HO-1↑	103
Anti-oxidative effect	RAW 264.7 cells	NR	4-Hydroxycinnamic acid (L-phenylalanine methyl ester) amide; 3,4-dihydroxyhydrocinnamic acid (L-aspartic acid	-	-	ox-LDL↓	102

			dibenzyl ester) amide; 3,4-dihydroxycinnamic acid (L-alanine methyl ester) amide				
	HCD-fed rats	NR	Cinnamate	100 mg/100 g of diet	6 weeks	CAT↑, Gpx↑	106
	HCD-fed rabbits	NR	Cinnamaldehyde	10 mg/kg/day	4 weeks	SOD↑, CAT↑, HO-1↑, NOx↑	29
	LPS-stimulated male Sprague-Dawley rats	NR	Cinnamaldehyde	30, 60 and 90 mg/kg/day	1 month	TLR4↓, NOX4↓	107
	Male leprdb diabetic (db/db) mice	NR	Cinnamaldehyde	diet containing 0.02% CA	12 weeks	Nrf2/p-eNOS↑	108
	HUVECs	NR	Cinnamaldehyde	20 μM	24 h	Nrf2/HO-1↑	17
	High glucose-treated HUVECs	NR	Cinnamaldehyde	10 μM	24 h	Nrf2↑, NQO1↑, CAT↑, Gpx-1↑	74
Regulation of immune response	Phorbol-12-myristate-13-acetate (PMA)-stimulated THP-1 cells	*Cinnamonum cassia* Presl of Chinese origin	Cinnamon water extract	10, 50, 100, 200 and 400 μg/ml	24, 48 and 72 h	CD11b↓, CD36↓, SRA↓, ERK1/2↓	113

	RAW 264.7 cells	NR	Cinnamaldehyde	0 to 40 μM	1, 6, 24 h	CD80↓, CD69↓, TLR2↓, CR3↓, PI3K↓, PDK1↓, NF-κB↓	114
	U937 cells	NR	Cinnamaldehyde	0, 20, 40 μM	30 min, 1 h, 12 h	CD29↑, CD43↑	114
Anti-Inflammatory activity	Human endothelial cell	NR	Cinnamaldehyde	50, 100 μM	0.5, 1, 3, 6, 9, 12 h	VCAM-1↓, ICAM-1↓, IκB-α↑, NF-κB↓, Nrf2/HO-1↑, GSH↑	121
	Human endothelial cell	*C. cassia*	*C. cassia* bark extracts	0.50%	0.5, 1, 3, 6, 9, 12 h	VCAM-1↓, ICAM-1↓, IκB-α↑, NF-κB↓, Nrf2/HO-1↑	121
	Endotoxin-injected mice	*C. osmophloeum* Kaneh.	Cinnamaldehyde	0.45 or 0.9 mg/kg body weight, every other day	2 weeks	IL-1β↓, IL-18↓, TNF-α↓, IFN-γ↓, HMGB-1↓, NF-κB↓, caspase-1↓, TLR4/MD2↓, MyD88↓, NLRP3↓, ASC↓	122
	Endotoxin-injected mice	*C. osmophloeum* Kaneh.	linalool	2.6 or 5.2 mg/kg body weight, every other day	2 weeks	IL-1β↓, IL-18↓, TNF-α↓, IFN-γ↓, HMGB-1↓, NF-κB↓, caspase-1↓, TLR4/MD2↓, MyD88↓, NLRP3↓, ASC↓	122
	THP-1 monocytes	*C. verum*	trans-cinnamaldehyde and *p*-cymene	25 μg/ml	2 h	IL-8↓, phosphorylation(p)-Akt and p-IκBα↓	123

LPS-activated J774A.1 cells	*C. cassia*	Cinnamomum cassia leaves oil and cinnamaldehyde	5-20 μg/m	4, 24 h	NO↓, MCP-1↓, MIP-1α↓, TNF-α↓, IL-1β↓, IL-6↓, iNOS↓, COX2↓, mPGES-1↓, IL-10↑, TGF-β↑	124
mouse RAW264.7 macrophages	*C. burmannii*	cinnamon polyphenol extract	100 mg/L	0.5-4 h	TTP↑, TNF↑	125
RAW 264.7 cells	*C. cassia* Blume	2'-hydroxycinnamaldehyde isolated from the bark *C. cassia* Blume	5, 10, 20, 40 μM	24 h	NO↓, NF-κB↓	127
LPS-stimulated RAW264.7 cells	NR	Cinnamaldehyde	0, 6.25, 12.5, 25, and 50 μM	24 h	TNF-α↓, PGE2↓, iNOS↓, COX2↓, NF-κB↓, IκBα↓	128
HFD-induced ApoE−/− mouse	NR	Cinnamaldehyde	5, 10, 20 mg/kg/day	8 weeks	TNF-α↓, IL-6↓, NO↓, MCP-1↓, MMP-2↓, IκBα/NF-κB↓	129
TNFα-treated endothelial cells	NR	Cinnamaldehyde	100 μM	15, 30 min and 1, 3, 6, 9, 12, 24 h	Grx-1↑, p65↓, NF-κB↓, ICAM-1↓	130
endotoxin-induced mice	*Cinnamomi cassia* Presl	Cinnamon water extract	20, 100 and 500 mg/kg/day	6 days	IκBα↑, JNK↓, p38↓, ERK1/2↓	131

					body weight			
	Suppression of VSMC growth and mobilization	Rat aortic vascular smooth muscle cells (VSMCs)	*C. cassia*	Cinnamyl alcohol, cinnamic acid, eugenol	10, 30, 50 μM	24 h	p21↑, p27↑, PLCγ1↓, Akt↓, p38↓, JNK↓	136
		Human aortic smooth muscle cells (HASMCs)	NR	2-methoxycinnamaldehyde	0, 1, 5, 10, 20, 50 μM	3, 24 h	cyclin D1↓, cyclin D3↓, CDK4↓, CDK6↓, p21↑, p27↑	138
	Repression of platelet activity and thrombosis	Human platelet-rich plasma, rat aorta	*C. philippinense*	Cinnamophilin	0.3, 1, 3, 10 μM	3, 15 min	TAX2↓	144
	Inhibition of angiogenesis	HUVECs	*C. cassia*	Water extract of *C. cassia*	1-100 μg/mL	24 h	VEGFR2↓	147
		Phorbol ester-treated HUVECs	*C. cassia*	Cinnamon bark powder extract	25 μg/mL	1, 3, or 6 h	PKCα↓, PKCη↓, pMAPK↓, VEGFR1/Flt1↓, VEGFR2/KDR/Flk1↓	148
Hypertension		descending thoracic aorta of male Wistar rats	NR	Cinnamaldehyde	10-100 μM	50 min	NO↑, AGEs↓	71
		L-arginine analogue like Nω Nitro-L-arginine methyl-ester (L-NAME)-induced hypertensive rats	*C. zeylanicum*	methanol extract of *C. zeylanicum* stem bark	5, 10, 20, 300 mg/kg/day	4 weeks	BP↓, NO↑	156

	Thoracic aortas of adult Wistar rats	*C. zeylanicum* Blume	*C. zeylanicum* Blume stem bark aqueous extract	5, 10 and 20mg/kg	-	NO↑, KATP↑	70
	Rings of porcine coronary arteries	NR	Cinnamaldehyde-loaded micelles	0.1, 1 mg/mL	-	NO↑, H2O2↑	157
	Rings of porcine coronary arteries	NR	Cinnamaldehyde	32, 100, 200, 320 μM	-	Ca2+↓	157
	HUVECs	NR	trans-cinnamaldehyde	0, 1, 10, and 50 μM	4 h	IRS1-PI3K-AKT-eNOS↑	158
	HFD-induced obese rats	NR	cinnamic acid	30 mg/kg/day	7 weeks	ACE↓	159
	mouse ventricular cardiomyocytes and mesenteric artery smooth muscle cells	NR	Cinnamaldehyde	0.01, 0.1, 1, 10, 100 μM	-	Ca2+↓	161
	wild-type mice	NR	Cinnamaldehyde	80 μmol/kg	-	BP↓, HR↓	163
	Fructose-fed hypertensive rats	NR	Cinnamaldehyde	20, 30 and 40 mg/kg/day	6 weeks	SBP↓, DBP↓, GPx↑, CAT↑, SOD↑, GSH↑, MDA↓	165
Myocardial Ischemia-reperfusion Injury	rat model of regional heart ischemia	*C. zeylanicum*	cinnamon bark ethanolic extract	50, 100, or 200 mg/kg/day	14 days	cTnI↓, MDA↓, LDH↓	168
	Ischemia/reperfusion (I/R) rats	*Cinnamomi cassia*	2-methoxycinnamal	100, 200 μg/kg	-	cTnI↓, MDA↓, LDH↓, HMGB1↓, VCAM-1↓, HO-	169

				dehyde			1↑, SOD↑	
Viral myocarditis		coxsackie virus B3 (CVB3)-infected cardiomyocytes	NR	α-bromo-4-chlorocinnamaldehyde	0.01, 0.1, 1, 10, 100 or 1000 μM	72 h	TNF-α↓, IL-β↓, IL-6↓	172
		BALB/c mice infected with CVB3	NR	α-bromo-4-chlorocinnamaldehyde	10, 20, 50 mg/kg/day	6 days	NF-κB↓, IκB-α↑, TLR4↓	172
Heart failure		fructose-fed rats displayed metabolic syndrome	NR	Cinnamaldehyde	20, 40 and 80 mg/kg/day	5 weeks	NLRP3↓, TLR4/6-IRAK4/1↓	174
		fructose-exposed H9c2 cells	NR	Cinnamaldehyde	20, 30 and 40μM	24 h	NLRP3↓, TLR4/6-IRAK4/1↓	174
Diabetes	Enhancement of insulin sensitivity and insulin secretion	streptozotocin (STZ)-treated rats	*C. zeylanicum*	encapsulated cinnamon oil emulsion	200 or 400 mg/kg/day body weight	4 weeks	IGF-1↑, MDA↓, SOD↑, GSH↑	191
		mouse 3T3-L1 adipocytes	*C. burmannii*	cinnamon polyphenols	1 or 10 μg/ml	3 h	IR-β↑	192
		HFD-fed rats	NR	cinnamon extract	300 mg/kg/day	3 weeks	IR-β↑, IRS1/PI3K↑, NO↑	197
		STZ-induced T2D rats	NR	Cinnamaldehyde	10 mg/kg/day	30 days	IRS1/PI3K/AKT2↑	199
		3T3-L1 adipocytes	NR	Trans-	50 μM	48 h	PPARδ↑, PPARγ↑	200

			cinnamaldehyde				
	TSA201 cells	NR	Trans-cinnamaldehyde	10-50 μM	24 h	PPARδ↑, PPARγ↑, RXR↑	200
	mouse 3T3-L1 adipocytes	*C. burmannii*	Cinnamon extracts	10, 100 μg/ml	0.5-16 h	GSK3B↓, IGF1R↓, IGF2R↓, PIK3R1↓	202
	3T3-L1 adipocytes	NR	Trans-cinnamic acid	80, 250 or 750 μM	5 h	ADIPOQ↑	203
	MGN3-1 cell line	NR	Cinnamaldehyde	100 μM	4 h	TRPA1↑	204
Regulation of the enzyme activity involved in glucose	male C57BIKs db/db mice	NR	Cinnamon bark extract	50 mg/kg/day body weight	12 weeks	α-glycosidase↓	206
	H4IIE rat hepatoma cells	*C. burmannii*	aqueous cinnamon extract	1-25 μg/ml		PEPCK↓, G6Pase↓	210
Regulation of glucose metabolism in liver, adipose tissue and muscle	STZ-induced diabetic rats	*C. zeylanicum*	encapsulated cinnamon oil emulsion	200 or 400 mg/kg/day body weight	4 weeks	GLUT2↓, FAS↓, SREBP-1c↓, PEPCK↓	191
	mouse 3T3-L1 adipocytes	*C. burmannii*	Cinnamon extracts	10, 100 μg/ml	0.5-16 h	GLUT1↑	202

	diabetic rats	*C. zeylanicum*	cinnamaldehyde	20 mg/kg/day body weight	2 months	PK↑, PEPCK↓	216
	diabetic rats	*C. zeylanicum*	aqueous cinnamon extract	30 mg/kg/day	22 days	UCP-1↑, GLUT4↑	217
	Rat models of T2DM established by combination of STZ and HFD	NR	Cinnamaldehyde	40 mg/kg/day	4 weeks	RBP4↓, GLUT4↑	220
	3T3-adipocytes	*C. zeylanicum*	cinnamon extract	0.2, 0.3, and 0.4 mg/mL	60, 90 min	ADIPOQ↓	221
	male C57BLKS db/db mice	NR	Cinnamaldehyde	20 mg/kg/day	4 weeks	GLUT-4↑, p-Akt↑	222
	3T3-L1 adipocytes and C2C12 myotubes	*C. zeylanicum*	cinnamon extract	10, 30, 100 mg/ml	15-240 min	LKB1-AMPK↑	223
Protection of islet cells	Alloxan induced diabetic rats	NR	camphor	30 mg/kg/day	21 days	Gpx↑, CAT↑, SOD↑, GSH↑	227
	H2O2-treated β-cells	*C. tamala* and *C. cassia*	Trimer procyanidin oligomers	2.5-50 μmol/L	48 h	ROS↓	229
	fatty-sucrosed diet/streptozotocin (FSD/STZ)-induced gestational diabetic rats	*C. zeylanicum* Blume	cinnamaldehyde	20 mg/kg/day	1 week	leptin↓, TNF-α↓, MDA↓, NO↓, GSH↑, CAT↑	230

	STZ-induced diabetic rats	*C. osmophloeum* Kaneh	Leaf essential oil from indigenous cinnamon	12.5, 25, or 50 mg/kg body weight every other day	3 weeks	SOD↑, GSH↑, IL-1β↓, TNF-α↓, NO↓	231
Modulating gut microbiota	STZ-induced T1DM mice	NR	Cinnamaldehyde	20 mg/kg/day	7 weeks	*Lactobacillus johnsonii*↑	237
Improvement of diabetes complications	diabetic rats	*C. zeylanicum*	cinnamon powder	3%	12 weeks	AGEs↓	241
	diabetic rats	*C. zeylanicum*	procyanidin-B2 (PCB2)	0.002%	12 weeks	AGEs↓	241
	STZ-Nrf2+/+ mice	NR	Cinnamic aldehyde	25, 50 mg/kg, three times per week for 16 weeks	16 weeks	Nrf2↑	242
	high-glucose-induced mesangial cells	*C. cassia*	nonpolar sesquiterpenoids in the bark of *C. cassia*	10, 30, 50 μg/ml	24 h	fibronectin↓, MCP-1↓, IL-6↓	243
	Type-2 diabetes rats induced by HFD and STZ	NR	cinnamaldehyde	0, 20 and 40 mg/kg/day	3 weeks	ChE↑, IL-6↓, TNF-α↓	246

	obese/T2D female mice	NR	Cinnamaldehyde	50 mg/kg body weight, three times a week	12 weeks	Nrf2↑, ERs↑, nNOS↓	248
	STZ-induced diabetic mice	*C. verum*	ointment prepared from *C. verum* hydroethanolic extract	5%, 10%	14 days	cyclin D1↑, GLUT-1↑, IGF-1↑	249

Abca1, adenosine triphosphate-binding cassette transporter-1; Abcg5, adenosine triphosphate-binding cassette subfamily G member; ACAT-1, cholesterol acyltransferase-1; ACAT-2, cholesterol acyltransferase-2; ACE, angiotensin converting enzyme; ACLY, ATP-citrate lyase; ADIPOQ, adiponectin; AGEs, advanced glycation end products; AKT, anti-phospho-phosphatidylinositol 3-kinase-linked protein kinase B; AMPK, AMP-activated protein kinase; ASC, apoptosis-associated speck-like protein containing a caspase-recruitment domain; ATGL, adipocyte triglyceride lipase; BP, blood pressure; CAT, catalase; CDK 4, cyclin-dependent kinase 4; CDK 6, cyclin-dependent kinase 6; C/EBP-α, CCAAT/enhancer-binding protein-alpha; CETP, cholesteryl ester transfer protein; cTnI, cardiac troponin I; COX-2, cyclooxygenase-2; CR3, complement receptor 3; DBP, diastolic blood pressure; DGAT2, diacylglycerol O-acyltransferase 2; eNOS, endothelial nitric oxide synthase; ERK 1/2, extracellular signal-related kinase 1/2; ERs, estrogen receptors; FAS, fatty acid synthase; FOXO1, forkhead box O1; GLUT1, glucose transporter 1; GLUT2, glucose transporter 2; GPD, glycerol-3-phosphate dehydrogenase; Gpx-1, glutathione peroxidase 1; Grx-1, glutaredoxin-1; GSH, glutathione; GSK3B, glycogen synthase kinase 3 beta; HDL-C, high-density lipoprotein cholesterol; HMGB-1, high-mobility group box 1 protein; HMG-CoAR, 3-hydroxy-3-methylglutaryl-CoA reductase; HO-1, haemeoxygenase-1; HR, heart rate; HSL, hormonesensitive lipase; ICAM-1, intercellular adhesion molecule-1; IFN-γ, interferon-γ; IGF-1, insulin-like growth factor 1; IGF1R, insulin-like growth factor 1 receptor; IGF2R, insulin-like growth factor 2 receptor; IL-6, interleukin-6; IL-8, interleukin-8; IL-10, interleukin-10; IL-18, interleukin-18; IR-β, insulin receptor-β; IL-1β, interleukin-1β; iNOS, inducible nitric oxide synthase; IR, Insulin receptor; IRAK4/1, IL-1R-associated kinase 4/1; IRS1, insulin receptor substrate 1; IκBα, inhibitor of NF-κB; JNK, c-Jun NH2-terminal kinase; LDH, lactate dehydrogenase; LDL, Low-density lipoprotein; LDL-C, low-density lipoprotein cholesterol; LDLR, LDL receptor; LXRs, liver X receptors; MCP-1, monocyte chemotactic protein 1; MDA, malondialdehyde; MIP-1α, macrophage inflammatory protein-1α; MMP-2, matrix metalloproteinase-2; mPGES-1, microsomal prostaglandin-E synthase-1; MTP, microsomal TG transfer protein; Mttp, microsomal triacylglycerol transfer protein; MyD88, myeloid differentiation primary response gene 88; NF-κB, nuclear factor-κB; NLRP3, nod-like receptor family, pyrin domain containing 3; nNOS, neuronal nitric oxide synthase; NO, nitric oxide; NOx, NO metabolite; NOX4, NADPH oxidase 4; Npc1l1, niemann-Pick c1-like 1; NQO1, NAD(P)H

dehydrogenase, and quinone 1; Nrf2, nuclear factor (erythroid-derived 2)-like 2 protein; ox-LDL, oxidized low -density lipoprotein; p-Akt, phosphorylation of Akt; PDK1, phosphoinositide-dependent kinase 1; p-eNOS, phosphorylated endothelial nitric oxide synthase; PEPCK, phosphoenolpyruvate carboxykinase; PGE2, prostaglandin E2; pHSL, phosphorylating hormonesensitive lipase; PI3K, phosphoinositide-3-kinase; PIK3R1, phosphatidylinositol 3-kinase regulatory subunit 1; PK, pyruvate kinase; PKA, protein kinase A; PKC, protein kinase C; PLCγ1, anti-phospho-phospholipase C-γ1; PLIN, perilipin; pMAPK, phosphorylation of MAPK; PPARα, peroxisome proliferator-activated receptor α; PPARγ, peroxisome proliferator-activated receptor γ; PPARδ; peroxisome proliferator-activated receptor δ; RBP4, retinol binding protein 4; ROS, reactive oxygen species; RXR, retinoid X receptor; SBP, systolic blood pressure; SOD, superoxide dismutase; SRAs, scavenger receptors; SREBF1, sterol regulatory element-binding transcription fac_x0002_tor 1; SREBF2, sterol regulatory element-binding transcription fac tor 2; SREBP-1c, sterol regulatory element-binding protein-1c; SREBP-2, sterol regulatory element-binding protein-2; TAX2, thromboxane A2; TC, total cholesterol; TG, triglycerides; TGF-β, transforming growth factor-β; TLR4, toll-like receptor 4; TLR4/MD2, toll-like receptor 4/myeloid differentiation protein 2; TNF-α, tumour necrosis factor-α; TRPA1, transient receptor potential ankyrin 1; TTP, tristetraprolin; UCP-1, uncoupling protein-1; VCAM-1, vascular cell adhesion molecule-1; VEGFR, vascular endothelial growth factor receptor; VLDL, very low-density lipoprotein; β3-ARs, β3-adrenergic receptors.