

SUPPLEMENTARY DATA

Supplementary Table 1. Clinical characteristics of 224 participants with diabetes, according to retinopathy status

Characteristics	All participants	Retinopathy		P-value*
		Absent	Present	
(Person Data)	N=224	N = 80	N = 144	
Gender, % male	59.4	55.8	62.0	0.35
Current cigarette smoker, % yes	7.1	58.1	50.4	0.11
Use of Insulin, %	65.6	57.9	71.3	0.037
Use of oral hypoglycemic agents, %	54.9	53.7	55.8	0.75
Use of lipid medication, %	54.5	46.3	58.1	0.080
Albuminuria, %				
Micro	2.7	2.2	3.1	0.42
Macro	12.5	5.9	17.1	<0.001
Diabetes type, % type 1	38.0	38.9	37.2	0.79
Diabetic retinopathy severity, %				
No DR	35.7			
Mild NPDR	14.3	-	-	-
Moderate NPDR	24.5	-	-	-
Severe NPDR - PDR	25.5	-	-	-
	Mean (SD)/ Median (IQR)			
†Age, years	59 (15)	58 (18)	60 (14)	0.43
BMI, kg/m ²	30.4 (6.3)	29.5 (5.6)	31.1 (6.6)	0.070
Systolic BP, mmHg	128.0 (14.5)	125.2 (13.1)	130.1 (15.1)	0.011
†Duration of diabetes, years	15 (12)	10 (11)	18 (13)	<0.001
HbA1c, %	7.9 (1.4)	7.6 (1.7)	8.0 (1.2)	0.022
Total Cholesterol, mmol/L	4.6 (1.1)	4.7 (1.1)	4.5 (1.1)	0.47
HDL-C, mmol/L	1.4 (0.4)	1.5 (0.4)	1.3 (0.5)	0.056
Non HDL-C, mmol/L	3.2 (1.0)	3.3 (1.0)	3.2 (1.1)	0.85
LDL-C, mmol/L	2.5 (0.8)	2.5 (0.7)	2.5 (0.9)	0.99
†Triglyceride, mmol/L	1.3 (1.0)	1.3 (1.0)	1.3 (1.1)	0.50
Apolipoprotein AI, g/L	1.4 (0.3)	1.5 (0.2)	1.4 (0.3)	0.001
Apolipoprotein B, g/L	0.8 (0.3)	0.8 (0.2)	0.9 (0.3)	0.015
Apolipoprotein B/AI	0.6 (0.2)	0.6 (0.2)	0.7 (0.2)	<0.001
†Glomerular Filtration Rate, mL/min	77 (61 – 91)	76 (61 – 91)	77 (61 – 90)	0.090

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†Albumin-creatinine ratio, mg/mmol	1.06 (0.57 – 2.8)	1.00 (0.51 – 2.30)	1.10 (0.60 – 3.73)	0.16
‡Skin iontophoresis, %				
Sodium nitroprusside (SNP)	5.0 (2.3)	5.6 (2.6)	4.6 (2.1)	0.005
Acetylcholine (ACh)	6.4 (3.2)	7.2 (3.1)	5.9 (3.1)	0.007
	All eyes	Retinopathy		P-value*
		Absent	Present	
(Eye-specific data)	N= 420	N = 186	N = 234	
‡Diabetic retinopathy severity, %				
No DR	41.6			
Mild NPDR	13.4	-	-	-
Moderate NPDR	22.3	-	-	-
Severe NPDR - PDR	22.7	-	-	-
Without laser	16.0	-	-	-
With laser	6.7	-	-	-
Grid/ Focal laser	2.6	-	-	-
Pan Retinal Photocoagulation	4.1	-	-	-
‡Flicker-light induced vasodilatation, %				
Arteriolar dilatation	1.4 (2.1)	1.8 (2.1)	1.2 (1.9)	0.006
Venular dilatation	2.8 (2.1)	3.2 (1.8)	2.6 (2.5)	0.003
‡Retinal vascular tortuosity index (x10 ⁵)				
Arteriolar	34.4 (18.6)	33.6 (16.8)	37.2 (21.9)	0.043
Venular	39.7 (18.8)	39.1 (19.2)	40.2 (18.5)	0.57
‡Artery to Vein ratio (AVR)	0.67 (0.07)	0.69 (0.06)	0.67 (0.07)	0.13

*P-values were obtained using chi-square test (categorical), t-test (continuous and normally distributed) or Mann-Whitney U test (continuous and skewed), comparing diabetes participants with and without retinopathy. †Results are shown as median (first – third quartile). ‡Right and left side data were used. Analysis using cluster t-test, with person as clustering factor to account within-person correlation between right and left side.

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Supplementary Table 2. Associations between serum traditional lipids and skin iontophoresis and flicker-light induced vasodilatation

	Serum Traditional Lipids	Skin iontophoresis (%)*				Flicker-light induced vasodilatation (%)*			
		Sodium nitroprussid		Acetylcholine		Arteriolar vasodilatation		Venular vasodilatation	
		Mean change ^a	P value	Mean change ^a	P value	Mean change ^a	P value	Mean change ^a	P value
	(per SD increase)	(95% CI)		(95% CI)		(95% CI)		(95% CI)	
Cholesterol, (1.1 mmol/L)		-0.14 (-0.66, 0.37)	0.58	0.51 (-0.04, 1.06)	0.07	0.07 (-0.14, 0.28)	0.52	0.04 (-0.18, -0.25)	0.73
HDL, (0.4 mmol/L)		0.68 (0.00, 1.35)	0.049	1.27 (0.57, 1.98)	<0.001	0.30 (-0.05, 0.66)	0.069	0.00 (-0.28, 0.28)	0.99
Non HDL, (0.2 mmol/L)		-0.29 (-0.95, 0.37)	0.40	-0.34 (-1.06, 0.38)	0.36	-0.16 (-0.42, 0.09)	0.20	0.08 (-0.19, 0.36)	0.55
LDL, (0.3 mmol/L)		0.04 (-0.63, 0.74)	0.92	-0.21 (-0.97, 0.56)	0.60	-0.07 (-0.33, 0.19)	0.59	0.07 (-0.22, 0.36)	0.64
Triglycerides, (1.0 mmol/L)		-0.52 (-1.08, 0.04)	0.069	-0.31 (-0.92, 0.29)	0.31	0.02 (-0.21, 0.26)	0.86	-0.08 (-0.31, 0.16)	0.54

* Percentage changes relative to baseline measures

^a Data are age and gender adjusted mean change

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Supplementary Table 3. Associations between serum traditional lipids and retinal vascular tortuosity index

	Serum Traditional Lipids	Retinal Vascular Tortuosity index (x10 ⁵)			
		Arteriolar		Venular	
		Mean change ^a	P value	Mean change ^a	P value
	(per SD increase)	(95% CI)		(95% CI)	
Total-Cholesterol, (1.1 mmol/L)		-0.39 (-2.57, 1.80)	0.73	-1.51 (-3.11, 0.09)	0.07
HDL-C, (0.4 mmol/L)		0.03 (-3.14, 3.21)	0.98	1.58 (-0.37, 3.53)	0.11
Non HDL, (0.2 mmol/L)		-0.81 (-3.72, 2.11)	0.59	-2.33 (-5.11, 0.54)	0.10
LDL-C, (0.3 mmol/L)		-0.84 (-3.82, 2.15)	0.58	-2.79 (-5.62, 0.97)	0.10
Triglycerides, (1.0 mmol/L)		-1.48 (-3.78, 0.81)	0.21	0.31 (-1.37, 1.99)	0.72

* P-value for trend

^a Data are age and gender adjusted mean change