**Supplementary materials**

**Table S1: The ready-to-use assay probe sequences applied in the present study**

|  |  |  |  |
| --- | --- | --- | --- |
| **No** | **polymorphism** | **probe sequence** | **Reference sequence (rs)**  **Assay No.** |
| 1 | **GSTM1** | GTATATTTGAGCCCAAGTGCTTGGA[C/T]GCCTTCCCAAATCTGAAGGACTTCA | **rs1056806**  [C\_175674977\_10](https://www.thermofisher.com/order/genome-database/details/genotyping/C_175674977_10?CID=&ICID=&subtype=) |
|
| 2 | **GSTT1** | CTTCTTGAGGGGGTTCACCTGGGCA[A/C]AGGCATCGCTTAAGTGCTGACCTGG | **Rs17856199** [C\_\_11214581\_10](https://www.thermofisher.com/order/genome-database/details/genotyping/C__11214581_10?CID=&ICID=&subtype=) |
|
| 3 | **GSTP1** | CGTGGAGGACCTCCGCTGCAAATAC[A/G]TCTCCCTCATCTACACCAACTATGT | **rs1695**  C\_\_\_3237198\_20 |
|
| 4 | **MGST3** | GACCCTGAGTGCAGGTTCAGACGTC[C/T]AGAGGAAATGACTTGATGGTACGGA | **Rs2065942**  C\_\_11214581\_10 |
|
| 5 | **SOD1** | ATGCTTAACTCTTGTAATAATGGCG[A/C]TAGCTTTCTGGAGTTCATATGGTAT | **rs2234694**  [C\_\_34770911\_10](https://www.thermofisher.com/order/genome-database/details/genotyping/C__34770911_10?CID=&ICID=&subtype=) |
|
| 6 | **SOD2** | CTGCCTGGAGCCCAGATACCCCAAA[A/G]CCGGAGCCAGCTGCCTGCTGGTGCT | **rs4880**  C\_\_\_8709053\_10 |
|
| 7 | **SOD3** | CATGCAGCGGCGGGACGACGACGGC[A/G]CGCTCCACGCCGCCTGCCAGGTGCA | **rs2536512**  C\_\_\_2668728\_10 |
|
| 8 | **CAT** | TTGGCTGAGCCTGAAGTCGCCACGG[A/T]CTCGGGGCAACAGGCAGATTTGCCT | **rs7943316**  C\_\_\_1883210\_10 |
|
| 9 | **GPX1** | CAGCGGAGCGCCCCGAACAAGCACT[G/A]TAAGGGGAGGCCAGCAGGCGCCTCC | **rs1800668**  [C\_\_\_7912052\_40](https://www.thermofisher.com/order/genome-database/details/genotyping/C___7912052_40?CID=&ICID=&subtype=) |
|
| 10 | **GPx3** | TCAGTCCCAACCTTCAGTTTTGGAA[T/C]GGTCAAAGAAGATACAATTGGGCCC | **rs3828599** C\_27495148\_10 |
|
| 11 | **GPx4** | CCGCCCGAGCCCCTGCCCACGCCCT[C/T]GGAGCCTTCCACCGGCACTCATGAC | **rs713041**  C\_\_\_2561693\_20 |
|
| 12 | **eNOS/NOS3** | CCCTGCTGCTGCAGGCCCCAGATGA[G/T]CCCCCAGAACTCTTCCTTCTGCCCC | **rs1799983**  C\_\_\_3219460\_20 |
|
| 13 | **iNOS/NOS2** | GTTGAGCTCTTTCAGCATGAAGAGC[A/G]ATTTCTTCAGTTTCTAGAAAGAGAG | **rs2297518**  C\_\_11889257\_10 |
|

Data source (Thermofisher Scientific, Applied Biosystems, USA).

**Table S2. Association of genetic variants with laboratory testing in diabetic patients**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ***GSTM1* rs1056806 (C/T)** | | **C/C (n=61)** | **C/T (n=40)** | **T/T (n=10)** | ***P*-value** |
| Glycaemic state | Serum glucose | 6.2 (5.1-8.9) | 5.9 (5-8.4) | 6.2 (5.3-9.9) | 0.95 |
| HbA1c, % | 6 (5.3-8.2) | 6.1 (5.4-7.8) | 5.3 (5.3-7.8) | 0.61 |
| Serum insulin | 165 (63-327) | 110 (64-448) | 160 (141.4-164) | 0.98 |
| Lipid profile | Triglyceride | 1.4 (1-1.9) | 1.8 (1-2.4) | 3.1 (2.9-3.8) | 0.02 |
| Total cholesterol | 4.9 (4.2-5.7) | 4.6 (4.3-5.6) | 5.2 (4.8-5.7) | 0.82 |
| HDL-cholesterol | 1.2 (1-1.4) | 1.3 (0.9-1.5) | 1 (1-1) | 0.34 |
| LDL-cholesterol | 3 (2.4-3.6) | 2.7 (2.2-3.7) | 3 (2.2-3.4) | 0.68 |
| ***GSTT1* rs17856199 (A/C)** | | **A/A (n=49)** | **A/C (n=45)** | **C/C (n=17)** | ***P*-value** |
| Glycaemic state | Serum glucose | 5.8 (5.2-7) | 5.4 (4.7-7.4) | 5.7 (4.5-6.4) | 0.54 |
| HbA1c, % | 5.4 (5.1-6) | 5.7 (5.2-7.1) | 5.4 (5.3-5.7) | 0.58 |
| Serum insulin | 230 (61.4-458) | 139 (73.3-294) | 131 (86-632) | 0.50 |
| Lipid profile | Triglyceride | 1.3 (1-2.1) | 1.6 (1.3-2) | 1.4 (1-2.6) | 0.23 |
| Total cholesterol | 4.9 (4.1-5.5) | 5 (4.3-6.1) | 4.7 (4.4-5.1) | 0.45 |
| HDL-cholesterol | 1.2 (1-1.3) | 1.2 (0.9-1.3) | 1.3 (1.1-1.4) | 0.44 |
| LDL-cholesterol | 3.1 (2.3-3.7) | 3.1 (2.6-3.8) | 2.9 (2.2-3.4) | 0.38 |
| ***GSTP1* rs1695 (A/G)** | | **A/A (n=49)** | **A/G (n=45)** | ***G/G (n=17)*** | ***P-value*** |
| Glycaemic state | Serum glucose | 5.7 (5.3-6.8) | 5.4 (4.8-7.2) | 6.2 (4.8-7.7) | 0.97 |
| HbA1c, % | 5.3 (5.1-6.1) | 5.6 (5.3-6.4) | 5.4 (5.3-6) | 0.47 |
| Serum insulin | 183 (99-435.5) | 139 (49.5-371) | 265 (107-499) | 0.30 |
| Lipid profile | Triglyceride | 1.5 (1.2-1.9) | 1.4 (0.9-2.4) | 1.6 (1.1-2.1) | 0.77 |
| Total cholesterol | 4.9 (4-5.5) | 5 (4.3-6.1) | 4.9 (4.3-5.7) | 0.59 |
| HDL-cholesterol | 1.2 (1-1.3) | 1.3 (1.1-1.4) | 1.1 (0.9-1.2) | 0.42 |
| LDL-cholesterol | 3 (2.3-3.6) | 3.1 (2.5-4) | 3 (2.4-3.6) | 0.70 |
| **MGST3 rs2065942 (C/T)** | | **A/A (n=111)** | **A/G-G/G (n=4)** | | ***P*-value** |
| Glycaemic state | Serum glucose | 5.7 (4.9-7) | 6.2 (5.4-7.5) | | 0.29 |
| HbA1c, % | 5.4 (5.2-6.2) | 5.6 (5.5-5.7) | | 0.90 |
| Serum insulin | 173.6 (71.1-390.5) | 207 (183.5-419.5) | | 0.71 |
| Lipid profile | Triglyceride | 1.4 (1.1-2.1) | 2.6 (2.1-2.6) | | 0.11 |
| Total cholesterol | 4.9 (4.2-5.7) | 5 (4.7-5.1) | | 0.80 |
| HDL-cholesterol | 1.2 (1-1.4) | 1 (1-1.5) | | 0.80 |
| LDL-cholesterol | 3 (2.4-3.7) | 3 (2.1-3.2) | | 0.23 |
| ***SOD1* rs2234694 (A/C)** | | **A/A (n=111)** | **A/C-C/C (n=1)** | | ***P*-value** |
| Glycaemic state | Serum glucose | 5.7 (4.9-7) | 8.90 | | 0.29 |
| HbA1c, % | 5.4 (5.2-6.1) | 5.40 | | 0.79 |
| Serum insulin | 165 (74.2-390) | 541.0 | | 0.94 |
| Lipid profile | Triglyceride | 1.5 (1.1-2.3) | 0.75 | | 0.98 |
| Total cholesterol | 4.9 (4.2-5.6) | 4.71 | | 0.91 |
| HDL-cholesterol | 1.2 (1-1.3) | 1.32 | | 0.43 |
| LDL-cholesterol | 3 (2.4-3.7) | 3.05 | | 0.65 |
| ***SOD2* rs4880 (A/G)** | | **A/A (n=37)** | **A/G (n=50)** | **G/G (n=23)** | ***P*-value** |
| Glycaemic state | Serum glucose | 5.4 (4.7-6.4) | 5.6 (4.9-7.2) | 6.8 (5.6-7.1) | 0.34 |
| HbA1c, % | 5.4 (5.1-6) | 5.4 (5.2-6) | 5.5 (5.2-6.9) | 0.95 |
| Serum insulin | 160 (63-337) | 178.1 (81-371) | 277 (106-448) | 0.62 |
| Lipid profile | Triglyceride | 1.4 (1.1-2) | 1.6 (1-2.6) | 1.3 (1.1-1.6) | 0.11 |
| Total cholesterol | 4.8 (4-5.5) | 4.9 (4.2-5.7) | 5.1 (4.5-6.1) | 0.83 |
| HDL-cholesterol | 1.2 (1-1.3) | 1.2 (0.9-1.4) | 1.3 (1.2-1.3) | 0.36 |
| LDL-cholesterol | 2.9 (2.3-3.6) | 3 (2.3-3.8) | 3.3 (2.8-4) | 0.31 |
| ***SOD3* rs2536512 (A/G)** | | **A/A (n=33)** | **A/G (n=55)** | **G/G (n=21)** | ***P*-value** |
| Glycaemic state | Serum glucose | 5.7 (4.8-6.9) | 5.4 (4.8-6.9) | 6.2 (5.4-7.6) | 0.29 |
| HbA1c, % | 5.7 (5.2-6.2) | 5.4 (5.2-6.1) | 5.4 (5.3-6.1) | 0.63 |
| Serum insulin | 160 (86-327) | 143 (63.5-379) | 317 (200-612) | 0.07 |
| Lipid profile | Triglyceride | 1.6 (1.1-2) | 1.4 (1.1-2.2) | 1.6 (0.9-2) | 0.55 |
| Total cholesterol | 5.1 (4.4-5.7) | 4.6 (4.2-5.5) | 5 (4.2-6) | 0.28 |
| HDL-cholesterol | 1.2 (1.1-1.4) | 1.2 (1-1.3) | 1.1 (0.9-1.4) | 0.53 |
| LDL-cholesterol | 3.2 (2.5-3.8) | 3 (2.3-3.7) | 2.9 (2.4-3.8) | 0.73 |
| ***CAT* rs7943316 (A/T)** | | **A/A (n=20)** | **A/T (n=32)** | **T/T (n=28)** | ***P*-value** |
| Glycaemic state | Serum glucose | 5.4 (4.5-6.4) | 5.4 (4.9-6) | 5.5 (4.8-7.4) | 0.69 |
| HbA1c, % | 5.4 (5.1-6.2) | 5.4 (5.2-6) | 5.5 (5.3-6.5) | 0.73 |
| Serum insulin | 120 (86-200) | 173.6 (59-448) | 205 (46.3-371) | 0.43 |
| Lipid profile | Triglyceride | 1.3 (1-1.8) | 1.6 (1.2-2.6) | 1.4 (0.9-2) | 0.15 |
| Total cholesterol | 4.9 (4.2-5.6) | 4.9 (4.4-5.5) | 5 (4.3-6.1) | 0.84 |
| HDL-cholesterol | 1.2 (1-1.3) | 1.3 (1.1-1.4) | 1.2 (1.1-1.5) | 0.86 |
| LDL-cholesterol | 3.1 (2.4-4.1) | 3 (2.3-3.6) | 3.3 (2.2-4.1) | 0.67 |
| ***GPX1*** **rs1800668 (G/A)** | | **A/A (n=12)** | **A/G (n=47)** | **G/G (n=106)** | ***P*-value** |
| Glycaemic state | Serum glucose | 5.9 (5-8.7) | 6.5 (5.1-9.3) | 6.9 (4.9-8.7) | 0.93 |
| HbA1c, % | 5.7 (5.3-7.9) | 6.3 (5.7-8.3) | 6.1 (5.4-7.7) | 0.39 |
| Serum insulin | 156 (62.5-376) | 125.5 (59-314) | 217 (130-426) | 0.63 |
| Lipid profile | Triglyceride | 1.3 (1-1.9) | 1.5 (1.1-2.1) | 1.7 (1.3-3.3) | 0.13 |
| Total cholesterol | 4.9 (4.2-5.5) | 4.9 (4.2-5.7) | 5.5 (4.3-6.1) | 0.51 |
| HDL-cholesterol | 1.2 (1-1.4) | 1.2 (1-1.4) | 1.1 (0.9-1.3) | 0.64 |
| LDL-cholesterol | 2.9 (2.3-3.5) | 2.9 (2.4-3.7) | 2.9 (2.1-3.9) | 0.74 |
| ***GPX3* rs151028993 (T/C)** | | **T/T (n=2)** | **T/C (n=5)** | **C/C (n=168)** | ***P*-value** |
| Glycaemic state | Serum glucose | 6.1 (5.1-8.8) | 4.8 (4.7-6.1) | 9 (4.4-13.6) | 0.12 |
| HbA1c, % | 6 (5.3-8.1) | 5.5 (5.4-5.6) | 7.8 (5.3-10.3) | 0.44 |
| Serum insulin | 164 (62.5-340) | 122 (77.6-184) | 145 (122-68.7) | 0.95 |
| Lipid profile | Triglyceride | 1.4 (1-2) | 1.7 (1.2-2.3) | 3.8 (3.1-4.4) | 0.10 |
| Total cholesterol | 4.9 (4.2-5.6) | 5.4 (4.8-5.9) | 5.3 (4.3-6.2) | 0.91 |
| HDL-cholesterol | 1.2 (1-1.4) | 1.3 (1-1.6) | 1 (1-1) | 0.56 |
| LDL-cholesterol | 2.9 (2.3-3.6) | 3.5 (2.8-3.7) | 2.6 (1.3-3.8) | 0.74 |
| ***GPX4* rs713041 (C/T)** | | **C/C (n=27)** | **C/T (n=62)** | **T/T (n=20)** | ***P*-value** |
| Glycaemic state | Serum glucose | 5.4 (4.7-7.4) | 5.7 (5.2-6.8) | 5.8 (5.2-7) | 0.93 |
| HbA1c, % | 5.4 (5.3-6.2) | 5.3 (5.1-6.1) | 5.4 (5.2-6.3) | 0.44 |
| Serum insulin | 160 (86-294) | 200 (75-423) | 118 (44.8-420) | 0.37 |
| Lipid profile | Triglyceride | 1.7 (1.2-2.4) | 1.5 (1.2-2) | 1.1 (0.9-1.4) | 0.05 |
| Total cholesterol | 5.2 (4.4-6.3) | 4.9 (4.2-5.5) | 4.8 (4.1-5.6) | 0.15 |
| HDL-cholesterol | 1.2 (0.9-1.4) | 1.2 (1-1.4) | 1.2 (1-1.3) | 0.99 |
| LDL-cholesterol | 3.2 (2.6-4.1) | 3 (2.3-3.7) | 3 (2.4-3.6) | 0.39 |
| ***NOS3* rs1799983 (G/T)** | | **G/G (n=63)** | **G/T (n=39)** | **T/T (n=9)** | ***P*-value** |
| Glycaemic state | Serum glucose | 5.7 (4.8-7) | 5.7 (5-7.4) | 5.5 (5.1-6.5) | 0.99 |
| HbA1c, % | 5.4 (5.2-6.1) | 5.5 (5.1-6.4) | 5.3 (5-6.3) | 0.77 |
| Serum insulin | 265 (71.1-382) | 143 (81.3-423) | 113 (71.5-304) | 0.62 |
| Lipid profile | Triglyceride | 1.5 (1.1-1.9) | 1.4 (1.1-2.4) | 2.2 (1.4-2.6) | 0.57 |
| Total cholesterol | 4.9 (4.3-6.1) | 4.9 (4.2-5.5) | 5.2 (4.3-5.4) | 0.53 |
| HDL-cholesterol | 1.2 (1.1-1.4) | 1.2 (0.9-1.4) | 1.2 (0.9-1.3) | 0.56 |
| LDL-cholesterol | 3.1 (2.3-4) | 2.9 (2.5-3.6) | 3.1 (2.2-3.5) | 0.62 |
| ***NOS2* rs2297518 (A/G)** | | **A/A (n=26)** | **A/G (n=64)** | **G/G (n=19)** | ***P*-value** |
| Glycaemic state | Serum glucose | 4.9 (4.5-5.7) | 5.7 (5.2-7.4) | 6.3 (5.8-7.6) | **0.004** |
| HbA1c, % | 5.3 (5.1-5.7) | 5.5 (5.3-6.5) | 5.4 (5.3-6) | 0.15 |
| Serum insulin | 185.5 (63-371) | 130 (66.4-356) | 321 (143-448) | 0.23 |
| Lipid profile | Triglyceride | 1.5 (0.9-1.8) | 1.4 (1.1-2.4) | 1.6 (1.1-2.4) | 0.91 |
| Total cholesterol | 5.3 (4.9-6.1) | 4.6 (4.1-5.4) | 5.1 (4.3-5.7) | 0.06 |
| HDL-cholesterol | 1.2 (1.1-1.5) | 1.2 (1-1.4) | 0.9 (0.8-1.3) | 0.08 |
| LDL-cholesterol | 3.5 (3.1-4) | 3.2 (2.6-3.6) | 3.2 (2.7-3.6) | 0.09 |

Values are shown as median and quartiles. Mann-Whitney U or Kruskal-Wallis tests were used. The bold values indicate significance at *P*-value < 0.05. The total number of cases for each investigated variant was not the same according to the genotyping recall success rate.

HbA1c: Glycosylated hemoglobin, HDL: high-density lipoprotein, LDL: low-density lipoprotein.

A picture containing toy

Description automatically generated

**Figure S1**. The SNP impact analysis on the GSTT1 (glutathione S-transferase theta 1) protein (NP\_000844), including the studied variant rs17856199 (F45C) (the small red arrow). Red Residue represents the SNP outcome predicted to be damaging. Yellow Residue represents SNP predicted to be harmless. The molecular consequence of phenylalanine substitution by cysteine at amino acid residue 45 decreases hydrophobic interaction. The analysis is executed by the SNPs3D online tool (http://www.snps3d.org/).