Supplementary Table S1: All Laboratory Findings of Studied Population

	Group		p-value
	Control (N=145)	diabetic gp (N=156)	
Age (years) ≤ median value	73 (50.3%)	78 (50%)	0.952
> median value	72 (49.7%)	78 (50%)	
Gender male	82 (56.6%)	98 (62.8%)	0.268
female	63	58	
Smoking no	124 (85.5%)	138 (88.5%)	0.447
yes	21 (14.5%)	18 (11.5%)	
BMI <=25	45 (31%)	30(19.2%)	0.018
>25	100 (69%)	126 (80.8%)	
HB (g/dl) normal	51 (35.2%)	60 (38.5%)	0.555
abnormal	94 (64.8%)	96 (61.5%)	
RBCs (Million/cm) normal	54 (37.2%)	60 (38.5%)	0.827
abnormal	91 (62.8%)	96 (61.5%)	
WBCs % normal	82 (56.6%)	47 (30.1%)	<0.001
abnormal	63 (43.4%)	109 (69.9%)	
PLT (thousand/cm) normal	145 (100%)	0 (0%)	<0.001
abnormal	0 (0%)	156 (100%)	
MCH (pg) normal	104 (71.7%)	128 (82.1%)	0.033
abnormal	41 (28.3%)	28 (17.9%)	
MCHC (g/dl) normal	42 (56.6%)	87 (30.1%)	<0.001
abnormal	63 (43.4%)	109 (69.9%)	
PLT (thousand/cm) normal	145 (100%)	0 (0%)	<0.001
abnormal	0 (0%)	156 (100%)	
MCH (pg) normal	104 (71.7%)	128 (82.1%)	0.033
abnormal	41(28.3%)	28 (17.9%)	
MCHC (g/dl) normal	42 (29%)	87 (55.8%)	
abnormal	103 (71%)	69 (44.2%)	<0.001

Monocyte (g/L) normal	0 (0%)	4 (2.6%)	
abnormal	145 (100%)	152 (97.4%)	*
Hb A1C normal	145 (100%)	36 (23.1%)	<0.001
prediabetic	0 (0%)	19 (12.2%)	
diabetic	0 (0%)	101 (64.7%)	
FBS normal	89 (61.4%)	0 (0%)	<0.001
abnormal	56 (38.6%)	156 (100%)	
PP normal	130 (89.7%)	3 (1.9%)	<0.001
abnormal	15 (10.3%)	153 (98.1%)	
GPT normal	138 (95.2%)	128 (82.1%)	<0.001
abnormal	7 (4.8%)	28 (17.9%)	
GOT normal	145 (100%)	114 (73.1%)	<0.001
abnormal	0 (0%)	42 (26.9%)	
LDH (U/L) normal	112 (77.2%)	120 (76.9%)	0.948
abnormal	33 (22.8%)	36 (23.1%)	
ESR (1hr) normal	32 (22.1%)	31 (19.9%)	0.640
abnormal	113 (77.9%)	125 (80.1%)	
INR normal	32 (22.1%)	31 (19.9%)	0.640
abnormal	113 (77.9%)	125 (80.1%)	
Urea normal	143 (98.6%)	145 (92.9%)	0.016
abnormal	2 (1.4%)	11 (7.1%)	
Cholesterol normal	143 (98.6%)	133 (85.3%)	<0.001
abnormal	2 (1.4%)	23 (14.7%)	
TG normal	125 (86.2%)	39 (25%)	<0.001
abnormal	20 (13.8%)	117 (75%)	
HDL normal	25 (17.2%)	11 (7.1%)	0.006
abnormal	120 (82.8%)	145 (92.9%)	
LDH (U/L) normal	33 (22.8%)	25 (16%)	0.139
abnormal	112 (77.2%)	131 (84%)	
rs228570 mutant type	2 (1.4%)	45 (28.8%)	<0.001
wild type	143 (98.6%)	111 (71.2%)	

rs1644410 wild type	145 (100%)	143 (91.7%)	<0.001
mutant type	0 (0%)	13 (8.3%)	
rs7975232 wild type	143 (98.6%)	147 (94.2%)	0.063
mutant type	2 (1.4%)	9 (5.8%)	

Supplementary Table S2: Multivariate Analysis of Allelic Discrimination of rs228570

	Beta coefficients	Standard error	odds ratio	95% C.I. for odds ratio		p-value
				Lower	Upper	
BMI	0.673	0.304	1.961	1.080	3.561	.027
Cholesterol	2.191	0.776	8.948	1.957	40.918	.005
rs228570	3.266	0.741	26.203	6.130	112.007	<0.001

Supplementary Table S3: Comparison between Study Groups based on rs228570

	rs228570		p-value
	mutant type (n=47)	wild type (n=254)	
Age (years) <=median value	26	125	0.442
	55.3%	49.2%	
> median value	21	129	
	44.7%	50.8%	
Gender male	31	149	0.349
	66.0%	58.7%	
female	16	105	
	34.0%	41.3%	
Smoking no	41	221	0.966
	87.2%	87.0%	
yes	6	33	
	12.8%	13.0%	
BMI <=25	10	65	0.530

	21.3%	25.6%	
>25	37	189	
	78.7%	74.4%	
HB (g/dl) normal	20	91	0.380
	42.6%	35.8%	
abnormal	27	163	
	57.4%	64.2%	
RBCs (Million/cm) normal	16	98	0.556
	34.0%	38.6%	
abnormal	31	156	
	66.0%	61.4%	
WBCs % normal	10	119	0.001
	21.3%	46.9%	
abnormal	37	135	
	78.7%	53.1%	
PLT (thousand/cm) normal	2	143	<0.001
	4.3%	56.3%	
abnormal	45	111	
	95.7%	43.7%	
MCH (pg) normal	37	195	0.770
	78.7%	76.8%	
abnormal	10	59	
	21.3%	23.2%	
MCHC (g/dl) normal	26	103	0.060
	55.3%	40.6%	
abnormal	21	151	
	44.7%	59.4%	
Monocyte (g/L) normal	2	2	*
	4.3%	.8%	

abnormal	45	252	
	95.7%	99.2%	
CRP (mg/L) normal	1	103	0.492
	50.0%	72.0%	
abnormal	1	40	
	50.0%	28.0%	
Hb A1C normal	10	171	<0.001
	21.3%	67.3%	
prediabetic	6	13	
	12.8%	5.1%	
diabetic	31	70	
	66.0%	27.6%	
FBS normal	1	88	<0.001
	2.1%	34.6%	
abnormal	46	166	
	97.9%	65.4%	
PP normal	1	132	<0.001
	2.1%	52.0%	
abnormal	46	122	
	97.9%	48.0%	
GPT normal	42	224	0.818
	89.4%	88.2%	
abnormal	5	30	
	10.6%	11.8%	
GOT normal	39	220	0.509
	83.0%	86.6%	
abnormal	8	34	
	17.0%	13.4%	
LDH (U/L) normal	37	195	0.770
	78.7%	76.8%	
abnormal	10	59	

	21.3%	23.2%	
ESR (1hr) normal	13	50	0.217
	27.7%	19.7%	
abnormal	34	204	
	72.3%	80.3%	
INR normal	13	50	0.217
	27.7%	19.7%	
abnormal	34	204	
	72.3%	80.3%	
Urea normal	43	245	0.124
	91.5%	96.5%	
abnormal	4	9	
	8.5%	3.5%	
Cholesterol normal	36	240	<0.001
	76.6%	94.5%	
abnormal	11	14	
	23.4%	5.5%	
TG normal	5	159	<0.001
	10.6%	62.6%	
abnormal	42	95	
	89.4%	37.4%	
HDL normal	7	29	0.500
	14.9%	11.4%	
abnormal	40	225	
	85.1%	88.6%	
LDH (U/L) normal	9	49	0.982
	19.1%	19.3%	
abnormal	38	205	
	80.9%	80.7%	
rs1644410 wild type	42	246	0.020
	89.4%	96.9%	

mutant type	5	8	
	10.6%	3.1%	
rs7975232 wild type	44	246	0.278
	93.6%	96.9%	
mutant type	3	8	
	6.4%	3.1%	
Control Group	2	143	<0.001
	4.3%	56.3%	
Diabetic group	45	111	
	95.7%	43.7%	

Multivariate (logistic regression model)

	Beta coefficients	Standard error	odds ratio	95% C.I. for odds ratio		p-value
				Lower	Upper	
Cholesterol	1.656	.441	5.238	2.208	12.427	<0.001

Supplementary Table S4: Comparison between Study Groups based on rs1644410

	rs1644410		p-value
	wild type	mutant type	
Age (years) <=median value	146	5	0.388
	50.7%	38.5%	
> median value	142	8	
	49.3%	61.5%	
Gender male	174	6	0.305
	60.4%	46.2%	
female	114	7	
	39.6%	53.8%	
Smoking No	251	11	0.790
	87.2%	84.6%	
Yes	37	2	
	12.8%	15.4%	

BMI <=25	70	5	0.248
	24.3%	38.5%	
>25	218	8	
	75.7%	61.5%	
HB (g/dl) normal	104	7	0.195
	36.1%	53.8%	
abnormal	184	6	
	63.9%	46.2%	
RBCs (Million/cm) normal	107	7	0.225
	37.2%	53.8%	
abnormal	181	6	
	62.8%	46.2%	
WBCs % normal	4	0	*
	1.4%	0.0%	
abnormal	284	13	
	98.6%	100.0%	
WBCs % normal	125	4	0.368
	43.4%	30.8%	
abnormal	163	9	
	56.6%	69.2%	
PLT (thousand/cm) normal	145	0	<0.001
	50.3%	0.0%	
abnormal	143	13	
	49.7%	100.0%	
MCH (pg) normal	224	8	0.173
	77.8%	61.5%	
abnormal	64	5	
	22.2%	38.5%	
MCHC (g/dl) normal	121	8	0.164
	42.0%	61.5%	
abnormal	167	5	
	58.0%	38.5%	
Monocyte (g/L) normal	4	0	*
	1.4%	0.0%	
abnormal	284	13	
	98.6%	100.0%	

Hb A1C normal	177	4	0.068
	61.5%	30.8%	
prediabetic	17	2	
	5.9%	15.4%	
diabetic	94	7	
	32.6%	53.8%	
FBS normal	89	0	0.017
	30.9%	0.0%	
abnormal	199	13	
	69.1%	100.0%	
PP normal	133	0	0.001
	46.2%	0.0%	
abnormal	155	13	
	53.8%	100.0%	
GPT normal	253	13	0.181
	87.8%	100.0%	
abnormal	35	0	
	12.2%	0.0%	
GOT normal	249	10	0.332
	86.5%	76.9%	
abnormal	39	3	
	13.5%	23.1%	
LDH (U/L) normal	223	9	0.491
	77.4%	69.2%	
abnormal	65	4	
	22.6%	30.8%	
ESR (1hr) normal	62	1	0.230
	21.5%	7.7%	
abnormal	226	12	
	78.5%	92.3%	
INR normal	62	1	0.230
	21.5%	7.7%	
abnormal	226	12	
	78.5%	92.3%	
Urea normal	275	13	0.434

	95.5%	100.0%	
abnormal	13	0	
	4.5%	0.0%	
Cholesterol normal	267	9	0.003
	92.7%	69.2%	
abnormal	21	4	
	7.3%	30.8%	
TG normal	161	3	0.020
	55.9%	23.1%	
abnormal	127	10	
	44.1%	76.9%	
HDL normal	35	1	0.628
	12.2%	7.7%	
abnormal	253	12	
	87.8%	92.3%	
LDH (U/L) normal	56	2	0.717
	19.4%	15.4%	
abnormal	232	11	
	80.6%	84.6%	
Control Group	145	0	<0.001
	50.3%	0.0%	
Diabetic group	143	13	
	49.7%	100.0%	
rs228570 mutant type	42	5	0.020
	14.6%	38.5%	
wild type	246	8	
	85.4%	61.5%	
rs7975232 wild type	285	5	<0.001
	99.0%	38.5%	
mutant type	3	8	
	1.0%	61.5%	

	Beta coefficients	Standard error	odds ratio	95% C.I. for odds ratio		p-value
				Lower	Upper	

Cholesterol	1.732	.642	5.651	1.605	19.897	.007

Supplementary Table S5: Comparison between Study Groups based on rs7975232

	rs7975232		p-value
	wild type (n=290)	mutant type (n=11)	
Age (years) <=median value	146	5	0.750
	50.3%	45.5%	
> median value	144	6	
	49.7%	54.5%	
Gender male	173	7	0.792
	59.7%	63.6%	
female	117	4	
	40.3%	36.4%	
Smoking no	253	9	0.599
	87.2%	81.8%	
yes	37	2	
	12.8%	18.2%	
BMI <=25	73	2	0.599
	25.2%	18.2%	
>25	217	9	
	74.8%	81.8%	
HB (g/dl) normal	106	5	0.548
	36.6%	45.5%	
abnormal	184	6	
	63.4%	54.5%	
RBCs (Million/cm) normal	107	7	0.073

	36.9%	63.6%	
abnormal	183	4	
	63.1%	36.4%	
WBCs % normal	126	3	0.287
	43.4%	27.3%	
abnormal	164	8	
	56.6%	72.7%	
PLT (thousand/cm) normal	143	2	0.043
	49.3%	18.2%	
abnormal	147	9	
	50.7%	81.8%	
MCH (pg) normal	224	8	0.727
	77.2%	72.7%	
abnormal	66	3	
	22.8%	27.3%	
MCHC (g/dl) normal	123	6	0.425
	42.4%	54.5%	
abnormal	167	5	
	57.6%	45.5%	
Monocyte (g/L) normal	4	0	*
	1.4%	0.0%	
abnormal	286	11	
	98.6%	100.0%	
CRP (mg/L) normal	102	2	0.371
	71.3%	100.0%	
abnormal	41	0	
	28.7%	0.0%	
Hb A1C normal	177	4	0.087

	61.0%	36.4%	
prediabetic	19	0	
	6.6%	0.0%	
diabetic	94	7	
	32.4%	63.6%	
FBS normal	87	2	
	30.0%	18.2%	0.399
abnormal	203	9	
	70.0%	81.8%	
PP normal	131	2	
	45.2%	18.2%	0.077
abnormal	159	9	
	54.8%	81.8%	
GPT normal	256	10	
	88.3%	90.9%	0.789
abnormal	34	1	
	11.7%	9.1%	
GOT normal	249	10	
	85.9%	90.9%	0.635
abnormal	41	1	
	14.1%	9.1%	
LDH (U/L) normal	227	5	
	78.3%	45.5%	0.011
abnormal	63	6	
	21.7%	54.5%	
ESR (1hr) normal	61	2	
	21.0%	18.2%	0.819
abnormal	229	9	
	79.0%	81.8%	

INR normal	61	2	0.819
	21.0%	18.2%	
abnormal	229	9	
	79.0%	81.8%	
Urea normal	277	11	0.473
	95.5%	100.0%	
abnormal	13	0	
	4.5%	0.0%	
Cholesterol normal	268	8	0.020
	92.4%	72.7%	
abnormal	22	3	
	7.6%	27.3%	
TG normal	161	3	0.065
	55.5%	27.3%	
abnormal	129	8	
	44.5%	72.7%	
HDL normal	34	2	0.517
	11.7%	18.2%	
abnormal	256	9	
	88.3%	81.8%	
LDH (U/L) normal	56	2	0.926
	19.3%	18.2%	
abnormal	234	9	
	80.7%	81.8%	
rs1644410 wild type	285	3	<0.001
	98.3%	27.3%	
mutant type	5	8	
	1.7%	72.7%	
Control Group	143	2	0.043

	49.3%	18.2%	
diabetic	147	9	
	50.7%	81.8%	
rs228570 mutant type	44	3	0.278
	15.2%	27.3%	
wild type	246	8	
	84.8%	72.7%	

	Beta coefficients	Standard error	odds ratio	95% C.I. for odds ratio		p-value
				Lower	Upper	
Cholesterol	1.519	.712	4.568	1.131	18.456	.033

Vitamin D

Supplementary Table S6: Comparison between Study Groups based on Vitamin D Status

	Vitamin D		p-value
	<=34.5 (n=157)	>34.5 (n=144)	
Gender male	95 (60.5%)	85 (59%)	0.793
female	62 (39.5%)	59 (41%)	
Age (years) <=median value	79 (50.3%)	72 (50%)	0.956
> median value	78 (49.7%)	72 (50%)	
BMI <=25	39 (24.8%)	36 (25%)	0.975
>25	118 (75.2%)	108 (75%)	
HB (g/dl) normal	59 (37.6%)	52 (36.1%)	0.792
abnormal	98 (62.4%)	92 (63.9%)	
RBCs (Million/cm) normal	58 (36.9%)	56 (38.9%)	0.728
abnormal	99 (63.1%)	88 (61.1%)	
WBCs %	3 (1.9%)	1 (0.7%)	*

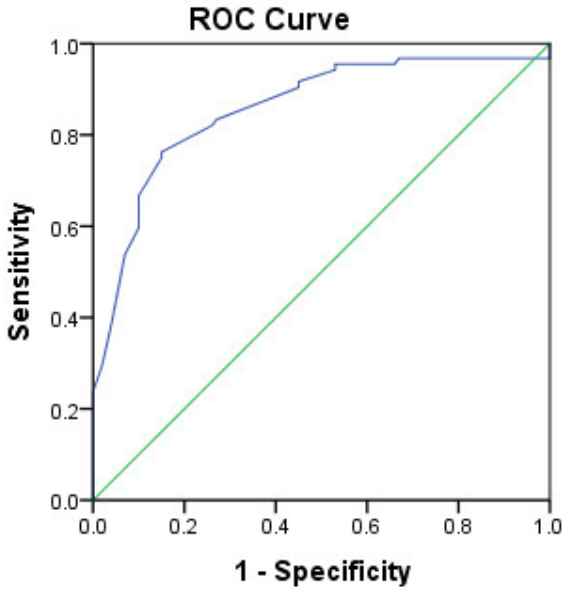
normal			
abnormal	153 (98.1%)	143 (99.3)	
PLT (thousand/cm) normal	101 (64.3%)	44 (30.6%)	<0.001
abnormal	56 (35.7%)	100 (69.4%)	
MCH (pg) normal	122 (77.7%)	110 (76.4%)	0.786
abnormal	35 (22.3%)	34 (23.6%)	
MCHC (g/dl) normal	59 (37.6%)	70 (48.6%)	0.053
abnormal	98 (62.4%)	74 (51.4%)	
CRP (mg/L) normal	77 (76.2%)	27 (61.4%)	0.067
abnormal	24 (23.8%)	17 (38.6%)	
LDH (U/L) normal	121 (77.1%)	111 (77.1%)	0.998
abnormal	36 (22.9%)	33 2.9%)	
Smoking no	137 (87.3%)	125 (86.8)	0.906
yes	20 (12.7%)	19 (13.2%)	
rs228570 mutant type	21 (13.4%)	26 (18.1%)	0.264
wild type	136 (86.6%)	118 (81.9%)	
rs1644410 wild type	154 (98.1%)	134 (93.1%)	0.032
mutant type	3 (1.9%)	10 (6.9%)	
rs7975232 wild type	154 (98.1%)	136 (94.4%)	0.092
mutant type	3 (1.9%)	8 (5.6%)	

Multivariate (logistic regression model)

	Beta coefficients	Standard error	odds ratio	95% C.I. for odds ratio		p-value
				Lower	Upper	
rs1644410	1.343	0.669	3.831	1.033	14.209	0.045

Fasting insulin

Supplementary Figure S1:ROC curve of Fasting Insulin



Area Under the Curve

Test Result Variable(s): Fasting Insulin

Area	Standard error	P value	95% Confidence Interval	
			Lower Bound	Upper Bound
0.858	0.024	<0.001	0.811	0.904

Cut off value	Sensitivity	Specificity
8.1	76.3	85

Supplementary Table S7: Insulin Status Among the Study Groups

		Frequency	Valid Percent
Valid	<=8.1	122	47.7
	>8.1	134	52.3
	Total	256	100.0

Supplementary Table S8: Comparison between Study Groups based on Fasting Insulin

	fasting insulin		p-value
	<=8.1	>8.1	
Gender male	67 (54.9%)	84 (62.7%)	0.207
female	55 (45.1%)	50 (37.3%)	
Age (years) <=median value	63 (51.6%)	64 (47.8%)	0.535
> median value	59 (48.4%)	70 (52.2%)	
BMI <=25	33 (27.0%)	28 (20.9%)	0.248
>25	89 (73.0%)	106 (79.1%)	
HB (g/dl) normal	42 (34.4%)	56 (41.8%)	0.226
abnormal	80 (65.6%)	78 (58.2%)	
RBCs (Million/cm) normal	43 (35.2%)	57 (42.5%)	0.232
abnormal	79 (64.8%)	77 (57.5%)	
WBCs % (n=255) normal	2 (1.6%)	0 (0%)	*
abnormal	120 (98.4 %)	133 (100%)	
PLT (thousand/cm) (n=256) normal	85 (69.7%)	15 (11.2%)	<0.001
abnormal	37 (30.3%)	119 (88.8%)	
MCH (pg) (n=256) normal	94 (77%)	108 (80.6%)	0.487
abnormal	28 (23%)	26 (19.4%)	
MCHC (g/dl) normal	45 (36.9%)	72 (53.7%)	0.007
abnormal	77 (63.1%)	62 (46.3%)	
CRP (mg/L) (n=100) normal	58 (68.2%)	12 (80%)	0.359
abnormal	27 (31.8%)	3 (20%)	
LDH (U/L) normal	91 (74.6%)	103 (76.9%)	0.671
abnormal	31 (25.4%)	31 (23.1%)	
Smoking no	101 (82.8%)	116 (86.6%)	0.401

yes	21 (17.2%)	18 (13.4%)	
Vitamin D <=34.5	77 (63.1%)	50 (37.3%)	<0.001
>34.5	45 (36.9%)	84 (62.7%)	
rs228570 mutant type	11 (9%)	36 (26.9%)	<0.001
wild type	111 (91%)	98 (73.1%)	
rs1644410 wild type	118 (96.7%)	125 (93.3%)	0.211
mutant type	4 (3.3%)	9 (6.7%)	
rs7975232 wild type	120 (98.4%)	125 (93.3%)	0.045
mutant type	2 (1.6%)	9 (6.7%)	

Multivariate (logistic regression model)

	Beta coefficients	Standard error	odds ratio	95% C.I. for odds ratio		p-value
				Lower	Upper	
rs228570	1.329	0.382	3.779	1.786	7.993	0.001
vit D	1.069	0.267	2.913	1.727	4.913	<0.001