

Supplementary Table 1. Results of association test with CAPN10 gene polymorphisms rs7607759 and rs2975766 in PCOS and control group

| Gene | Genotype | Controls (n=169) | Cases (n=169) | OR (95%CI) | P Value |
|---------------|------------------|---------------------|------------------|------------------|---------|
| <i>CAPN10</i> | rs7607759 | | | | |
| | AA | 108(63.91) | 118(69.82) | Reference | 0.248 |
| | AG | 55(32.54) | 42(24.85) | 0.69(0.43-1.13) | 0.141 |
| | GG | 6(3.55) | 09(5.33) | 1.37(0.47-3.98) | 0.558 |
| | AG+GG | 61(36.09) | 51(30.18) | 0.76(0.49-1.21) | 0.247 |
| | HW:p | 0.756 | 0.052 | | |
| | Allele frequency | | | | |
| | A | 271(80.18) | 278(82.25) | Reference | |
| | G | 67(19.82) | 60(17.75) | 0.87(0.59-1.28) | 0.490 |
| | MAF | 0.20 | 0.18 | | |
| | rs2975766 | | | | |
| | GG | 157(92.90) | 148(87.57) | Reference | 0.255 |
| | GA | 11(6.51) | 19(11.24) | 1.83(0.84-3.98) | 0.121 |
| | AA | 1(0.59) | 2(1.81) | 2.12(0.19-23.65) | 0.531 |
| | GA+AA | 12(7.10) | 21(12.43) | 1.85(0.88-3.91) | 0.099 |
| | HW:p | 0.118 | 0.139 | | |
| | Allele frequency | | | | |
| | G | 325(96.15) | 315(93.20) | Reference | |
| | A | 13(3.85) | 23(6.80) | 1.82(0.91-3.66) | 0.086 |
| | MAF | 0.04 | 0.07 | | |

Odds ratio - OR, CI- confidence interval, HW- hardy-Weinberg, MAF- minor allele frequency; A- adenine; G, guanine. A chi squared test was performed to evaluate the association between single nucleotide polymorphisms and PCOS; the genotypes were verified to comply with the Hardy – Weinberg equilibrium; odds ratio and 95% confidence interval were calculated to assess the relative risk; *P*-value < 0.05 was considered to be statistically significant.

Supplementary Table 2. Genotype – phenotype correlation of rs689 of INS gene in PCOS and control subjects

| PARAMETERS | CASES-PCOS (n=169) | | | | CONTROLS (n=169) | | | |
|-----------------------|--------------------|---------------|--------------|---------|------------------|---------------|--------------|---------|
| | T/T (n=131) | T/A (n=35) | A/A (n=3) | p-Value | T/T (n=124) | T/A (n=41) | A/A (n=4) | P-Value |
| <i>INS</i> (rs689) | | | | | | | | |
| Age | 27±4.4 | 26.97±3.96 | 22.67±1.53 | 0.230 | 27.46±4.05 | 27.75±4.17 | 26.75±1.71 | 0.859 |
| BMI | 25.3±4.6 | 24.32±4.15 | 27.55±3.89 | 0.343 | 24.17±3.25 | 24.38±.61 | 22.58±3.02 | 0.589 |
| Waist(cms) | 82.31±15.70 | 79.71±11.35 | 87.0±12.3 | 0.548 | 64.08±13.95 | 63.95±13.69 | 61.25±12.82 | 0.922 |
| Hip(cms) | 96.36±18.38 | 90.94±12.32 | 99.33±11.93 | 0.238 | 87.78±13.65 | 85.36±14.37 | 83.75±19.36 | 0.664 |
| Waist/hip ratio | 0.85±0.04 | 0.87±0.04 | 0.87±0.02 | 0.020* | 0.73±0.07 | 0.74±0.06 | 0.74±0.04 | 0.410 |
| LH | 8.55±4.44 | 11.06±5.96 | 11.25±6.53 | 0.020* | 4.73±2.42 | 4.58±2.25 | 4.30±1.65 | 0.891 |
| FSH | 6.22±2.14 | 6.02±1.92 | 6.02±1.16 | 0.874 | 7.21±2.37 | 6.72±2.22 | 8.06±1.81 | 0.366 |
| LH/FSH | 1.50±0.83 | 2.04±1.28 | 1.80±0.77 | 0.011* | 0.71±0.42 | 0.73±0.39 | 0.52±0.13 | 0.597 |
| Estradiol | 63.74±27.96 | 68.86±24.49 | 59.39±5.23 | 0.577 | 58.92±20.86 | 62.99±24.21 | 72.73±19.4 | 0.297 |
| Testosterone | 72.15±48.61 | 70.27±34.51 | 65.81±14.79 | 0.953 | 28.91±14.43 | 26.97±4.79 | 19.96±4.79 | 0.321 |
| Insulin | 13.83±8.30 | 13.98±5.16 | 8.86±1.19 | 0.537 | 10.71±4.34 | 11.01±4.27 | 9.95±3.11 | 0.862 |
| HOMA-IR | 3.12±2.14 | 3.02±1.31 | 1.94±0.32 | 0.583 | 2.27±0.98 | 2.32±0.95 | 2.14±0.74 | 0.930 |
| Hirsutism | 4.63±4.37 | 4.68±4.43 | 5.0±5.29 | 0.989 | 1.84±1.61 | 1.87±1.52 | 1.00±0.81 | 0.566 |
| PG | 90.30±18.23 | 86.74±12.51 | 89.0±14.0 | 0.552 | 85.86±8.42 | 85.22±8.34 | 87.25±4.85 | 0.854 |
| PPG | 117.49±35.36 | 110.28±21.74 | 117.66±17.78 | 0.514 | 109.50±9.36 | 111.34±13.14 | 120±21.60 | 0.118 |
| ET(mm) | 5.53±3.09 | 5.53±2.96 | 3.66±3.21 | 0.579 | 4.00±2.16 | 3.88±1.61 | 5.55±1.80 | 0.300 |
| OV(right) | 10.89±77.03 | 7.93±4.40 | 13.70±5.70 | 0.042* | 4.53±3.75 | 5.50±4.52 | 5.69±5.09 | 0.362 |
| OV(left) | 9.40±4.99 | 8.59±3.95 | 10.75±9.35 | 0.591 | 4.47±4.43 | 3.95±2.87 | 3.53±2.40 | 0.719 |
| AFC(right) | 7.21±6.46 | 9.51±5.86 | 13.0±0.00 | 0.058 | 0.95±2.73 | 1.75±3.94 | 2.00±4.00 | 0.306 |
| AFC(left) | 7.03±6.53 | 9.40±6.08 | 13.0±0.00 | 0.054 | 0.94±2.76 | 1.46±3.39 | 1.00±2.00 | 0.613 |

LH-luteinizing hormone, FSH- follicle stimulating hormone, HOMA-IR-homeostatic model assessment of insulin resistance, PG- pre-prandial glucose, PPG- post-prandial glucose, ET- endometrial thickness, OV- ovarian volume, AFC- antral follicular count, * $P < 0.05$.

Supplementary Table 3. Genotype – phenotype correlation of rs1799817 of INSR gene in PCOS and control subjects

| PARAMETERS | CASES-PCOS (n=169) | | | | CONTROLS (n=169) | | | |
|----------------------------|--------------------|---------------|---------------|---------|------------------|---------------|---------------|---------|
| | C/C (n=19) | C/T (n=76) | T/T (n=74) | p-Value | C/C (n=22) | C/T (n=67) | T/T (n=80) | P-Value |
| <i>INSR</i> (rs1799817) | | | | | | | | |
| Age | 26.05±3.86 | 27.04±4.47 | 27.02±4.33 | 0.652 | 27.04±2.90 | 27.68±4.46 | 27.51±3.94 | 0.813 |
| BMI | 21.31±4.26 | 25.35±4.66 | 25.13±4.56 | 0.677 | 23.23±3.52 | 24.13±3.30 | 24.48±3.27 | 0.289 |
| Waist(cms) | 78.63±12.96 | 82.45±13.38 | 82.08±16.68 | 0.599 | 59.41±11.25 | 63.77±14.51 | 65.42±13.67 | 0.192 |
| Hip(cms) | 92.89±14.97 | 95.90±15.73 | 95.28±19.42 | 0.796 | 82.81±13.40 | 87.19±15.24 | 87.53±12.79 | 0.355 |
| Waist/hip ratio | 0.85±0.05 | 0.86±0.04 | 0.86±0.04 | 0.402 | 0.71±0.05 | 0.72±0.07 | 0.74±0.07 | 0.215 |
| LH | 11.70±5.60 | 8.90±4.84 | 8.68±4.64 | 0.049* | 4.97±1.99 | 4.96±2.41 | 4.36±2.37 | 0.247 |
| FSH | 6.11±1.90 | 6.35±2.21 | 6.02±1.99 | 0.618 | 7.05±2.12 | 7.31±2.24 | 6.96±2.46 | 0.663 |
| LH/FSH | 1.96±0.67 | 1.53±0.91 | 1.63±1.06 | 0.221 | 0.74±0.28 | 0.73±0.39 | 0.68±0.46 | 0.754 |
| Estradiol | 65.75±27.85 | 63.80±25.96 | 65.42±28.25 | 0.922 | 55.31±22.35 | 60.84±19.78 | 61.07±23.15 | 0.524 |
| Testosterone | 72.60±24.73 | 71.65±60.06 | 71.39±30.25 | 0.995 | 26.35±14.57 | 28.06±12.68 | 28.88±13.24 | 0.723 |
| Insulin | 11.36±4.51 | 14.05±7.67 | 14.11±8.31 | 0.350 | 10.14±3.53 | 10.98±4.15 | 10.76±4.60 | 0.728 |
| HOMA-IR | 2.59±1.10 | 3.20±2.13 | 3.07±1.99 | 0.495 | 2.24±0.92 | 2.29±0.94 | 2.28±1.01 | 0.966 |
| Hirsutism | 5.73±4.33 | 4.56±4.05 | 4.46±4.71 | 0.514 | 1.64±1.65 | 1.91±1.67 | 1.81±1.49 | 0.775 |
| PG | 93.63±24.46 | 90.64±15.09 | 87.36±16.81 | 0.275 | 88.77±10.01 | 84.67±8.96 | 85.80±7.04 | 0.132 |
| PPG | 127.78±60.05 | 114.56±21.74 | 114.46±32.54 | 0.252 | 110.23±10.50 | 110.16±12.19 | 110.22±9.71 | 0.999 |
| ET(mm) | 4.98±2.84 | 5.13±3.29 | 6.02±2.80 | 0.145 | 4.14±2.12 | 3.70±1.74 | 4.24±2.24 | 0.265 |
| OV(right) | 9.80±6.41 | 9.37±5.39 | 11.44±7.70 | 0.150 | 5.43±6.27 | 4.48±2.73 | 4.87±4.09 | 0.611 |
| OV(left) | 9.30±4.36 | 8.73±4.76 | 9.79±5.09 | 0.413 | 4.85±3.08 | 4.03±2.32 | 4.43±5.28 | 0.679 |
| AFC(right) | 7.76±6.27 | 7.18±6.04 | 8.42±6.73 | 0.497 | 1.82±3.61 | 0.85±2.56 | 1.26±3.34 | 0.419 |
| AFC(left) | 7.73±7.01 | 7.41±6.36 | 7.82±6.54 | 0.923 | 1.64±3.00 | 0.58±2.03 | 1.33±3.43 | 0.189 |

LH-luteinizing hormone, FSH- follicle stimulating hormone, HOMA-IR-homeostatic model assessment of insulin resistance, PG- pre-prandial glucose, PPG- post-prandial glucose, ET- endometrial thickness, OV- ovarian volume, AFC- antral follicular count, * $P < 0.05$.

Supplementary Table 4. Genotype – phenotype correlation of rs1801278 of *IRS1* gene in PCOS and control subjects

| PARAMETERS | CASES-PCOS (n=169) | | | | CONTROLS (n=169) | | | |
|-----------------|--------------------|----------------|---------------|---------|------------------|---------------|---------------|---------|
| | G/G (n=25) | G/A (n=108) | A/A (n=36) | p-Value | G/G (n=50) | G/A (n=94) | A/A (n=25) | P-Value |
| Age | 26.76±3.87 | 27.06±4.58 | 26.61±3.95 | 0.846 | 28.20±4.25 | 26.97±4.05 | 28.20±3.30 | 0.148 |
| BMI | 24.81±4.94 | 25.00±4.34 | 25.79±4.99 | 0.617 | 24.15±3.78 | 23.99±3.13 | 24.94±3.08 | 0.451 |
| Waist(cms) | 83.04±81.38 | 81.38±15.11 | 82.47±16.20 | 0.848 | 63.56±14.09 | 63.85±13.97 | 65.36±12.96 | 0.860 |
| Hip(cms) | 95.12±12.87 | 95.00±17.28 | 96.31±20.20 | 0.925 | 85.54±12.52 | 86.84±15.22 | 89.08±11.19 | 0.584 |
| Waist/hip ratio | 0.87±0.05 | 0.85±0.04 | 0.85±0.04 | 0.194 | 0.74±0.07 | 0.73±0.06 | 0.73±0.07 | 0.854 |
| LH | 9.64±5.91 | 8.75±4.59 | 9.86±5.08 | 0.426 | 4.68±2.25 | 4.51±2.23 | 5.32±2.93 | 0.314 |
| FSH | 5.63±1.77 | 6.36±2.21 | 6.00±1.81 | 0.233 | 7.06±2.33 | 7.16±2.24 | 6.97±2.74 | 0.925 |
| LH/FSH | 1.84±1.14 | 1.50±0.85 | 1.82±1.11 | 0.108 | 0.71±0.34 | 0.68±0.44 | 0.83±0.45 | 0.285 |
| Estradiol | 60.49±17.87 | 64.31±26.49 | 68.90±33.40 | 0.476 | 56.71±18.14 | 58.34±67.91 | 47.72±65.02 | 0.152 |
| Testosterone | 72.16±30.33 | 72.41±52.47 | 69.02±29.91 | 0.927 | 27.85±10.76 | 28.75±14.73 | 26.99±11.43 | 0.817 |
| Insulin | 14.15±12.78 | 13.27±4.94 | 15.04±9.74 | 0.475 | 11.18±4.56 | 10.23±3.92 | 11.96±4.82 | 0.141 |
| HOMA-IR | 3.27±2.90 | 2.96±1.41 | 3.27±2.61 | 0.622 | 2.41±1.07 | 2.15±0.86 | 2.51±1.07 | 0.149 |
| Hirsutism | 3.92±2.90 | 4.66±4.40 | 5.11±4.44 | 0.580 | 1.90±1.33 | 1.82±1.77 | 1.72±1.24 | 0.895 |
| PG | 95.16±26.62 | 88.94±16.12 | 87.43±9.95 | 0.186 | 86.86±9.14 | 85.42±8.04 | 84.72±7.59 | 0.492 |
| PPG | 120.56±55.77 | 116.86±29.97 | 110.26±15.18 | 0.439 | 111.17±12.38 | 109.87±10.69 | 109.48±7.52 | 0.741 |
| ET(mm) | 5.15±2.68 | 5.51±3.12 | 5.71±3.15 | 0.781 | 3.64±2.02 | 4.13±1.93 | 4.32±2.44 | 0.288 |
| OV(right) | 9.88±4.64 | 10.49±7.27 | 10.13±5.95 | 0.899 | 5.31±5.67 | 4.68±3.12 | 4.15±2.55 | 0.456 |
| OV(left) | 8.06±4.05 | 9.64±5.08 | 8.96±4.67 | 0.320 | 4.33±2.35 | 4.45±5.11 | 3.85±1.76 | 0.805 |
| AFC(right) | 8.48±6.21 | 7.51±6.41 | 8.14±6.47 | 0.739 | 1.06±3.03 | 0.90±2.65 | 2.40±4.35 | 0.094 |
| AFC(left) | 8.32±6.72 | 7.44±6.56 | 7.69±6.19 | 0.830 | 0.94±2.62 | 0.77±2.36 | 2.44±4.60 | 0.036* |

LH-luteinizing hormone, FSH- follicle stimulating hormone, HOMA-IR-homeostatic model assessment of insulin resistance, PG- pre-prandial glucose, PPG- post-prandial glucose, ET- endometrial thickness, OV- ovarian volume, AFC- antral follicular count, * $P < 0.05$.

Supplementary Table 5. Genotype – phenotype correlation of rs1805097 of *IRS2* gene in PCOS and control subjects

| PARAMETERS | CASES-PCOS (n=169) | | | | CONTROLS (n=169) | | | |
|----------------------------|--------------------|---------------|---------------|---------|------------------|---------------|---------------|---------|
| | G/G (n=83) | G/A (n=71) | A/A (n=15) | p-Value | G/G (n=84) | G/A (n=65) | A/A (n=20) | P-Value |
| <i>IRS2</i> (rs1805097) | | | | | | | | |
| Age | 27.06±3.91 | 26.56±4.33 | 27.86±6.34 | 0.529 | 27.36±3.82 | 27.40±4.17 | 28.55±4.46 | 0.480 |
| BMI | 24.54±4.46 | 25.24±4.43 | 28.01±4.89 | 0.024* | 23.92±3.28 | 24.36±3.51 | 24.69±2.93 | 0.552 |
| Waist(cms) | 79.86±14.82 | 82.95±13.55 | 87.67±19.33 | 0.123 | 62.16±14.29 | 65.23±13.42 | 67.60±12.22 | 0.187 |
| Hip(cms) | 93.48±17.19 | 96.25±15.70 | 100.80±23.84 | 0.267 | 84.95±15.19 | 87.78±12.19 | 91.25±12.59 | 0.145 |
| Waist/hip ratio | 0.85±0.04 | 0.86±0.04 | 0.87±0.03 | 0.265 | 0.73±0.06 | 0.73±0.07 | 0.73±0.04 | 0.630 |
| LH | 9.21±4.98 | 8.73±4.92 | 10.45±4.38 | 0.455 | 4.67±2.31 | 4.71±2.40 | 4.64±2.50 | 0.993 |
| FSH | 6.34±2.07 | 5.91±2.07 | 6.53±2.14 | 0.346 | 7.01±2.34 | 7.08±2.29 | 7.62±2.43 | 0.574 |
| LH/FSH | 1.61±1.01 | 1.63±0.97 | 1.63±0.57 | 0.990 | 0.73±0.41 | 0.72±0.44 | 0.63±0.29 | 0.604 |
| Estradiol | 66.12±30.32 | 62.24±23.37 | 68.80±24.52 | 0.563 | 58.72±21.22 | 60.74±22.63 | 64.91±21.13 | 0.507 |
| Testosterone | 64.30±30.19 | 78.62±61.12 | 79.31±15.34 | 0.119 | 26.47±11.63 | 30.48±14.56 | 28.25±13.87 | 0.183 |
| Insulin | 14.51±9.81 | 13.27±4.87 | 12.11±4.40 | 0.418 | 10.81±4.08 | 10.92±4.69 | 10.10±3.79 | 0.754 |
| HOMA-IR | 3.27±2.55 | 2.91±1.18 | 2.80±1.22 | 0.447 | 2.32±0.97 | 2.27±0.98 | 2.17±0.89 | 0.838 |
| Hirsutism | 4.711±4.44 | 4.36±4.30 | 5.66±4.45 | 0.572 | 1.83±1.67 | 1.83±1.49 | 1.80±1.47 | 0.996 |
| PG | 89.59±16.96 | 88.41±14.34 | 94.60±27.77 | 0.447 | 86.33±9.07 | 84.51±7.07 | 87.25±8.54 | 0.285 |
| PPG | 115.31±32.25 | 113.84±14.34 | 130.06±68.29 | 0.213 | 111.02±12.22 | 108.89±8.84 | 111.0±10.29 | 0.464 |
| ET(mm) | 5.42±2.68 | 5.59±3.50 | 5.50±2.90 | 0.940 | 4.05±1.94 | 3.94±2.34 | 4.12±1.39 | 0.919 |
| OV(right) | 9.93±5.97 | 10.36±7.68 | 12.39±4.58 | 0.418 | 5.12±4.81 | 4.42±3.11 | 4.65±2.33 | 0.563 |
| OV(left) | 9.22±4.79 | 9.21±5.17 | 9.68±3.91 | 0.939 | 4.37±2.68 | 4.48±5.71 | 3.61±2.03 | 0.698 |
| AFC(right) | 7.08±6.37 | 8.61±6.31 | 7.80±6.59 | 0.338 | 0.95±2.47 | 1.46±3.76 | 1.15±3.13 | 0.611 |
| AFC(left) | 6.90±6.57 | 8.38±6.27 | 8.06±6.85 | 0.358 | 0.79±2.21 | 1.38±3.55 | 1.20±3.24 | 0.466 |

LH-luteinizing hormone, FSH- follicle stimulating hormone, HOMA-IR-homeostatic model assessment of insulin resistance, PG- pre-prandial glucose, PPG- post-prandial glucose, ET- endometrial thickness, OV- ovarian volume, AFC- antral follicular count, * $P<0.05$.

Supplementary Table 6. Genotype – phenotype correlation of rs1801282 of *PPAR-G* gene in PCOS and control subjects

| PARAMETERS | CASES-PCOS (n=169) | | | | CONTROLS (n=169) | | | |
|------------------------------|--------------------|---------------|----------------|---------|------------------|---------------|---------------|---------|
| | C/C (n=4) | C/G (n=36) | G/G (n=129) | p-Value | C/C (n=3) | C/G (n=41) | GG (n=125) | P-Value |
| <i>PPAR-G</i> (rs1801282) | | | | | | | | |
| Age | 22.5±1.50 | 26.77±4.07 | 27.11±4.39 | 0.085 | 27.33±1.53 | 27.75±4.17 | 27.45±4.04 | 0.912 |
| BMI | 26.47±3.84 | 24.23±4.13 | 25.32±4.68 | 0.357* | 23.89±1.83 | 24.37±3.61 | 24.12±3.27 | 0.904 |
| Waist(cms) | 84.75±10.99 | 79.53±11.25 | 82.42±15.79 | 0.545 | 67.33±4.93 | 63.95±13.69 | 63.92±14.02 | 0.915 |
| Hip(cms) | 97.50±10.41 | 90.58±12.33 | 96.54±18.45 | 0.183 | 93.00±7.00 | 85.36±14.36 | 87.10±13.87 | 0.582 |
| Waist/hip ratio | 0.86±0.02 | 0.87±0.04 | 0.85±0.04 | 0.009** | 0.72±0.04 | 0.74±0.06 | 0.73±0.07 | 0.418 |
| LH | 9.82±6.05 | 10.94±5.91 | 8.58±4.46 | 0.036* | 3.96±1.84 | 4.58±2.25 | 4.73±2.41 | 0.812 |
| FSH | 5.81±1.04 | 5.95±1.94 | 6.25±2.14 | 0.703 | 8.00±2.22 | 6.72±2.22 | 7.22±2.36 | 0.404 |
| LH/FSH | 1.62±0.73 | 2.04±1.26 | 1.50±0.83 | 0.011* | 0.47±0.11 | 0.74±0.39 | 0.71±0.42 | 0.568 |
| Estradiol | 54.64±10.41 | 69.40±24.35 | 63.73±28.02 | 0.408 | 78.45±19.17 | 62.98±24.20 | 58.89±20.78 | 0.198 |
| Testosterone | 59.46±17.53 | 70.02±34.05 | 72.48±48.90 | 0.830 | 21.12±5.14 | 26.96±8.61 | 28.81±14.42 | 0.476 |
| Insulin | 9.82±2.14 | 14.15±5.19 | 13.79±8.35 | 0.566 | 10.36±3.67 | 11.01±4.27 | 10.69±4.33 | 0.909 |
| HOMA-IR | 2.07±0.37 | 3.04±1.29 | 3.12±2.15 | 0.580 | 2.23±0.88 | 2.32±0.95 | 2.27±0.97 | 0.960 |
| Hirsutism | 4.00±4.76 | 4.78±4.40 | 4.64±4.38 | 0.942 | 1.00±1.00 | 1.87±1.52 | 1.83±1.61 | 0.650 |
| PG | 86.75±12.28 | 86.55±12.38 | 90.46±18.32 | 0.458 | 86.00±6.67 | 85.22±8.34 | 85.88±8.39 | 0.889 |
| PPG | 113.25±16.99 | 110.55±21.48 | 117.61±35.59 | 0.517 | 110.0±10.00 | 111.34±13.14 | 109.83±10.00 | 0.741 |
| ET(mm) | 3.75±2.63 | 5.48±2.92 | 5.56±3.11 | 0.508 | 5.93±2.00 | 3.88±1.61 | 4.01±2.16 | 0.248 |
| OV(right) | 11.17±6.88 | 7.90±4.32 | 10.98±7.05 | 0.046* | 3.25±1.69 | 5.50±4.52 | 4.59±3.81 | 0.362 |
| OV(left) | 9.49±8.04 | 8.49±3.94 | 9.46±5.01 | 0.571 | 3.22±2.84 | 3.95±2.87 | 4.47±4.42 | 0.695 |
| AFC(right) | 13.00±0.00 | 9.42±5.81 | 7.17±6.48 | 0.043* | 0.00±0.00 | 1.76±3.94 | 1.01±2.79 | 0.328 |
| AFC(left) | 13.00±0.00 | 9.36±6.00 | 6.97±6.56 | 0.035* | 0.00±0.00 | 1.46±3.39 | 0.96±2.76 | 0.522 |

LH-luteinizing hormone, FSH- follicle stimulating hormone, HOMA-IR-homeostatic model assessment of insulin resistance, PG- pre-prandial glucose, PPG- post-prandial glucose, ET- endometrial thickness, OV- ovarian volume, AFC- antral follicular count, * $P<0.05$, ** $P<0.01$

Supplementary Table 7. Genotype – phenotype correlation of rs3856806 of *PPAR-G* gene in PCOS and control subjects

| PARAMETERS | CASES-PCOS (n=169) | | | | CONTROLS (n=169) | | | |
|------------------------------|--------------------|---------------|--------------|---------|------------------|---------------|--------------|---------|
| | C/C (n=123) | C/T (n=40) | T/T (n=6) | p-Value | C/C (n=117) | C/T (n=49) | TT (n=3) | P-Value |
| <i>PPAR-G</i> (rs3856806) | | | | | | | | |
| Age | 27.08±4.44 | 26.50±4.06 | 26.33±4.27 | 0.717 | 27.68±4.17 | 26.86±3.59 | 32.0±2.00 | 0.073 |
| BMI | 24.97±4.36 | 25.72±5.04 | 24.81±5.74 | 0.655 | 23.92±3.28 | 24.67±3.16 | 26.51±6.85 | 0.194 |
| Waist(cms) | 80.94±14.71 | 84.40±15.43 | 83.67±13.71 | 0.424 | 63.06±14.04 | 66.16±12.62 | 64.66±23.71 | 0.418 |
| Hip(cms) | 94.32±16.61 | 97.92±19.51 | 97.67±16.25 | 0.493 | 85.71±14.14 | 89.46±12.79 | 85.0±21.28 | 0.277 |
| Waist/hip ratio | 0.86±0.04 | 0.86±0.04 | 0.85±0.04 | 0.654 | 0.73±0.07 | 0.74±0.06 | 0.75±0.11 | 0.785 |
| LH | 9.08±4.89 | 9.09±5.14 | 10.07±4.23 | 0.891 | 4.76±2.43 | 4.47±2.23 | 4.88±1.04 | 0.751 |
| FSH | 6.30±2.15 | 5.88±1.97 | 5.63±0.96 | 0.441 | 7.12±2.24 | 7.09±2.62 | 6.98±0.89 | 0.993 |
| LH/FSH | 1.59±0.96 | 1.67±0.98 | 1.83±0.75 | 0.778 | 0.73±0.45 | 0.67±0.31 | 0.69±0.11 | 0.760 |
| Estradiol | 64.14±27.46 | 66.62±25.59 | 64.25±32.22 | 0.881 | 60.01±21.55 | 59.69±21.78 | 77.71±28.89 | 0.373 |
| Testosterone | 68.73±30.41 | 82.02±75.64 | 62.35±36.13 | 0.241 | 28.13±14.08 | 28.02±10.47 | 35.18±17.98 | 0.654 |
| Insulin | 13.96±6.67 | 13.57±10.58 | 11.44±4.66 | 0.725 | 11.01±4.53 | 10.27±3.71 | 9.33±2.91 | 0.506 |
| HOMA-IR | 3.11±1.85 | 3.07±2.43 | 2.40±1.12 | 0.693 | 2.33±1.02 | 2.18±0.83 | 1.95±0.79 | 0.561 |
| Hirsutism | 4.65±4.42 | 5.15±4.36 | 1.33±1.36 | 0.137 | 1.80±1.53 | 1.93±1.72 | 1.00±0.00 | 0.581 |
| PG | 89.29±17.88 | 91.23±15.72 | 83.33±6.83 | 0.552 | 85.59±8.53 | 86.20±7.96 | 84.0±6.93 | 0.852 |
| PPG | 115.20±34.67 | 119.27±28.83 | 110.67±13.44 | 0.732 | 109.54±10.38 | 111.04±10.76 | 122.33±22.23 | 0.104 |
| ET(mm) | 5.49±3.15 | 5.52±2.96 | 5.50±1.52 | 0.999 | 4.09±1.99 | 3.90±2.15 | 2.70±2.34 | 0.459 |
| OV(right) | 10.69±7.37 | 9.36±3.97 | 9.28±4.58 | 0.509 | 5.07±4.39 | 4.04±2.57 | 6.00±5.43 | 0.272 |
| OV(left) | 9.25±4.89 | 9.14±4.63 | 10.18±6.48 | 0.888 | 4.08±2.50 | 4.94±6.46 | 3.59±3.09 | 0.449 |
| AFC(right) | 7.36±6.46 | 9.27±5.87 | 6.50±7.12 | 0.228 | 0.83±2.63 | 1.75±3.77 | 5.00±5.00 | 0.020* |
| AFC(left) | 6.98±6.53 | 9.75±5.86 | 6.67±7.31 | 0.059 | 0.85±2.49 | 1.59±3.75 | 1.33±1.53 | 0.319 |

LH-luteinizing hormone, FSH- follicle stimulating hormone, HOMA-IR-homeostatic model assessment of insulin resistance, PG- pre-prandial glucose, PPG- post-prandial glucose, ET- endometrial thickness, OV- ovarian volume, AFC- antral follicular count, * $P < 0.05$.

Supplementary Table 8. Genotype – phenotype correlation of rs7607759 of *CAPN10* gene in PCOS and control subjects

| PARAMETERS | CASES-PCOS (n=169) | | | | CONTROLS (n=169) | | | |
|------------------------------|--------------------|---------------|--------------|---------|------------------|---------------|--------------|---------|
| | A/A (n=118) | A/G (n=42) | G/G (n=9) | p-Value | A/A (n=108) | A/G (n=55) | G/G (n=6) | P-Value |
| <i>CAPN10</i> (rs7607759) | | | | | | | | |
| Age | 27.28±4.57 | 26.38±3.76 | 24.67±2.69 | 0.140 | 27.85±4.07 | 27.14±3.96 | 25.00±3.09 | 0.170 |
| BMI | 25.24±4.50 | 25.18±4.94 | 23.68±3.56 | 0.616 | 24.25±3.11 | 23.84±3.67 | 26.05±3.55 | 0.286 |
| Waist(cms) | 82.24±14.12 | 81.64±17.03 | 77.89±14.29 | 0.697 | 64.75±13.76 | 61.96±14.29 | 68.83±7.03 | 0.326 |
| Hip(cms) | 95.85±16.49 | 94.69±19.84 | 90.89±16.08 | 0.688 | 88.07±13.87 | 84.16±14.27 | 87.67±7.76 | 0.235 |
| Waist/hip ratio | 0.86±0.04 | 0.86±0.04 | 0.86±0.05 | 0.838 | 0.73±0.06 | 0.73±0.07 | 0.78±0.05 | 0.170 |
| LH | 8.76±4.58 | 9.63±5.24 | 11.45±6.93 | 0.211 | 4.74±2.45 | 4.68±2.26 | 3.61±0.85 | 0.521 |
| FSH | 6.05±2.00 | 6.56±2.38 | 6.09±1.44 | 0.399 | 7.06±2.17 | 7.34±2.65 | 5.75±1.86 | 0.273 |
| LH/FSH | 1.61±0.94 | 1.60±0.99 | 1.88±1.13 | 0.695 | 0.72±0.43 | 0.69±0.39 | 0.68±0.24 | 0.922 |
| Estradiol | 64.28±27.12 | 63.77±28.47 | 75.02±18.00 | 0.502 | 61.26±21.94 | 58.51±21.49 | 57.54±22.42 | 0.715 |
| Testosterone | 72.12±52.48 | 68.06±20.11 | 82.26±31.48 | 0.686 | 27.52±11.21 | 29.64±16.65 | 27.95±9.81 | 0.625 |
| Insulin | 13.28±4.86 | 15.28±12.88 | 13.23±5.52 | 0.347 | 11.05±4.50 | 10.36±3.94 | 9.35±2.96 | 0.451 |
| HOMA-IR | 2.92±1.27 | 3.55±3.29 | 2.95±1.25 | 0.209 | 2.35±1.01 | 2.18±0.91 | 1.94±0.63 | 0.401 |
| Hirsutism | 4.63±4.48 | 4.07±3.62 | 7.56±5.38 | 0.095 | 2.06±1.61 | 1.36±1.39 | 2.00±2.00 | 0.028* |
| PG | 88.52±17.09 | 92.21±18.21 | 90.44±11.38 | 0.483 | 86.20±8.71 | 86.20±8.71 | 85.0±7.81 | 0.613 |
| PPG | 113.59±32.72 | 123.24±35.25 | 113.88±13.63 | 0.258 | 110.51±10.79 | 110.51±10.79 | 109.74±10.88 | 0.869 |
| ET(mm) | 5.32±2.77 | 5.89±3.79 | 6.06±2.81 | 0.501 | 4.02±2.08 | 4.02±2.08 | 4.03±2.01 | 0.976 |
| OV(right) | 10.32±7.14 | 9.95±4.96 | 12.25±7.04 | 0.645 | 4.94±3.93 | 4.94±3.93 | 4.54±4.15 | 0.818 |
| OV(left) | 9.28±4.99 | 8.95±4.37 | 10.35±5.71 | 0.732 | 4.40±4.52 | 4.40±4.52 | 4.11±2.88 | 0.831 |
| AFC(right) | 7.74±6.33 | 7.76±6.55 | 8.56±6.73 | 0.934 | 1.38±3.27 | 1.38±3.27 | 0.89±2.86 | 0.409 |
| AFC(left) | 7.19±6.32 | 8.57±6.82 | 8.89±6.97 | 0.417 | 1.27±3.04 | 1.27±3.04 | 0.80±2.78 | 0.411 |

LH-luteinizing hormone, FSH- follicle stimulating hormone, HOMA-IR-homeostatic model assessment of insulin resistance, PG- pre-prandial glucose, PPG- post-prandial glucose, ET- endometrial thickness, OV- ovarian volume, AFC- antral follicular count, * $P < 0.05$.

Supplementary Table 9. Genotype – phenotype correlation of rs2975766 of *CAPN10* gene in PCOS and control subjects

| PARAMETERS | CASES-PCOS (n=169) | | | | CONTROLS (n=169) | | |
|------------------------------|--------------------|---------------|--------------|---------|------------------|---------------|---------|
| | G/G (n=148) | G/A (n=19) | A/A (n=2) | p-Value | G/G (n=157) | G/A (n=11) | P-Value |
| <i>CAPN10</i> (rs2975766) | | | | | | | |
| Age | 27.01±4.37 | 26.53±4.15 | 24.00±2.83 | 0.570 | 27.50±4.02 | 27.91±4.50 | 0.885 |
| BMI | 25.34±4.59 | 23.84±4.17 | 22.96±6.29 | 0.320 | 24.04±3.21 | 26.14±4.55 | 0.119 |
| Waist(cms) | 82.39±14.81 | 78.47±15.21 | 74.50±14.85 | 0.436 | 63.92±13.75 | 66.91±13.92 | 0.246 |
| Hip(cms) | 95.65±17.36 | 93.56±17.21 | 85.0±18.38 | 0.622 | 87.06±13.97 | 84.54±12.49 | 0.339 |
| Waist/hip ratio | 0.86±0.04 | 0.84±0.04 | 0.87±0.02 | 0.050 | 0.73±0.07 | 0.78±0.06 | 0.011* |
| LH | 8.71±4.46 | 11.96±7.04 | 12.74±4.58 | 0.013* | 4.58±2.24 | 6.15±3.37 | 0.084 |
| FSH | 6.24±2.02 | 5.75±2.59 | 5.99±1.68 | 0.630 | 7.13±2.34 | 6.97±2.22 | 0.522 |
| LH/FSH | 1.52±0.86 | 2.34±1.39 | 2.10±0.17 | 0.002** | 0.69±0.38 | 0.96±0.66 | 0.114 |
| Estradiol | 64.13±27.05 | 69.84±28.04 | 60.65±24.53 | 0.674 | 60.05±21.84 | 65.18±19.71 | 0.359 |
| Testosterone | 69.66±46.94 | 85.68±33.06 | 85.03±9.23 | 0.325 | 28.12±13.14 | 30.52±14.05 | 0.667 |
| Insulin | 13.99±8.02 | 11.68±4.44 | 18.05±1.20 | 0.346 | 10.69±4.29 | 11.23±3.94 | 0.267 |
| HOMA-IR | 3.15±2.07 | 2.42±0.89 | 4.09±0.38 | 0.242 | 2.26±0.96 | 2.36±0.94 | 0.236 |
| Hirsutism | 4.53±4.34 | 5.78±4.76 | 3.00±0.00 | 0.432 | 1.86±1.59 | 1.18±1.16 | 0.149 |
| PG | 90.11±17.98 | 84.95±8.31 | 91.50±2.12 | 0.462 | 85.74±8.21 | 85.27±10.29 | 0.863 |
| PPG | 116.74±34.72 | 110.37±12.28 | 115.00±7.07 | 0.729 | 109.76±10.18 | 116.36±17.20 | 0.147 |
| ET(mm) | 5.44±3.17 | 6.08±2.14 | 4.80±0.28 | 0.654 | 4.04±2.08 | 3.74±1.55 | 0.96 |
| OV(right) | 10.30±6.66 | 10.84±6.77 | 7.48±6.81 | 0.789 | 4.71±3.63 | 6.24±7.52 | 0.373 |
| OV(left) | 9.08±4.74 | 10.69±5.88 | 8.33±2.85 | 0.386 | 4.28±4.08 | 5.10±4.03 | 0.715 |
| AFC(right) | 7.60±6.37 | 8.42±6.26 | 15.50±3.53 | 0.198 | 1.17±3.16 | 1.27±2.19 | 0.926 |
| AFC(left) | 7.42±6.48 | 8.74±6.65 | 12.50±0.71 | 0.400 | 1.05±2.94 | 1.36±2.50 | 0.884 |

The A/A (A/A=1) genotype were not included in the control group because only one subject among controls had this genotype. LH-luteinizing hormone, FSH- follicle stimulating hormone, HOMA-IR-homeostatic model assessment of insulin resistance, PG- pre-prandial glucose, PPG-post-prandial glucose, ET- endometrial thickness, OV- ovarian volume, AFC- antral follicular count, * $P < 0.05$, ** $P < 0.01$.

Supplementary Table 10. Results from multifactor dimensionality reduction analysis

| No. of loci | Gene Variants | CVC | TA | Odds Ratio (95%CI) | <i>P</i> - value |
|-------------|---------------|-------|-------|-----------------------|------------------|
| 1 | rs3856806 | 9/10 | 0.514 | 1.16(0.25-5.39) | 0.845 |
| 2 | rs1801282 | 10/10 | 0.526 | 1.24(0.31-4.83) | 0.755 |

CVC- cross validation consistency, TA- testing accuracy, CI- confidence interval.