**Table S1: Clinicopathological characteristics of breast cancer patients included for the study (N=156)**

|  |  |  |  |
| --- | --- | --- | --- |
| S.No. | Variables | | Total (%) |
|  |  | |  |
| 1 | **Age**  **(Years)** | <50 | 30(19) |
| ≥50 | 126(81) |
| 2 | **Weight**  **(Kg)** | <60 | 75(48) |
| ≥60 | 81(52) |
| 3 | **Tumour size**  **(cm)** | <4` | 73(47) |
| ≥4 | 83(53) |
| 4 | **Clinical Stage** | I | 36(23) |
| II | 52(33) |
|  |  | III | 56(36) |
|  |  | IV | 12(8) |
| 5 | **Histological group[[1]](#footnote-1)** | WD | 65(42) |
| MD+PD | 91(58) |
| 6 | **Lymph Node** | Negative | 85(54) |
| Positive | 71(46) |
| 7 | **Menarche** | <15 | 42(27) |
| ≥15 | 114(73) |
| 8 | **Menopause** | Pre | 38(24) |
| Post | 118(76) |
| 9 | **Having Child** | No | 23(15) |
| Yes | 133(85) |
| 10 | **Abortion** | No | 104(67) |
| Yes | 52(33) |
| 11 | **Breast feeding** | No | 60(38) |
| Yes | 96(62) |
| 12 | **Use of contraceptive** | No | 105(67) |
| Yes | 51(33) |
| 13 | **ER** | Negative | 74(47) |
| Positive | 82(53) |
| 14 | **PR** | Negative | 103(66) |
| Positive | 53(34) |
| 15 | **Her-2** | Negative | 111(71) |
| Positive | 45(29) |
| 16 | **TNBC[[2]](#footnote-2)** | No | 106(68) |
| Yes | 50(32) |

**Table S2:** Representative table of primer sequence for PCR and their respective temperature 558 and amplicon size

|  |  |  |  |
| --- | --- | --- | --- |
| **Exon** | **Primer Sequence** | **Annealing Temp.(ᵒC)** | **Amplicon size (bp)** |
| 1 | F-5' GCCCCGTCATTGACAGTT 3' | 58 | 227 |
|  | R-5' GAGGCCTGGAGGATTTAACC 3' |  |  |
| 2 | 5' TAAGGGCTTCGAGTGATGCT 3' | 56 | 273 |
|  | R-5' GCATGAGCAATGGAGCTG 3' |  |  |
| 3 | F-5' CTCGCATTTCATGTTTGACA 3' | 58 | 394 |
|  | R-5' TAAATATGCACCCGGTGAGG 3' |  |  |
| 4 | F-5' GAGTTTCTTGTCTCAATTTAGATGC 3' | 63 | 290 |
|  | R-5' TTTCTTTTCAAAGACGGGTGA 3' |  |  |
| 5 | F-5' GTGGAAACATGTCTTAAGGAGTACA 3' | 64 | 225 |
|  | R-5' TTCCTGGCAAACAGTGAAGA 3' |  |  |
| 6 | F-5' GTCCAAAGAGATTGTTTACTGTGG 3' | 63 | 278 |
|  | R-5' GGGGGAGTGATGCTATTTTT 3' |  |  |
| 7 | F-5' GCCTTTCCACACTGACAGGTA 3' | 64 | 296 |
|  | R-5' AAATTCTTCTGCTAGGGTTTACG 3' |  |  |
| 8 | F-5' GGCAACACTGGCAGTTGATA 3' | 60 | 230 |
|  | R-5' GGAGCCCAAACTGTCTCATT 3' |  |  |
| 9 | F-5' AAGCAAGAAATCCCATGCAC 3' | 57 | 299 |
|  | R-5' TGTGCAAAAGCAAACAAGGA 3' |  |  |
| 10 | F-5' GGAACTCTCCATGACCTCCA 3' | 59 | 223 |
|  | R-5' GGAACTCTCCATGACCTCCA 3' |  |  |
| 11 | F-5' CCGACGTACAGGGAACATAAA 3' | 61 | 253 |
|  | R-5' ATGATTCTCCCCCAAAGAGC 3' |  |  |
| 12 | 12 F-5' GTTTGGGAATGCGTGTTTT 3' | 58 | 255 |
|  | R-5' AGAATTAGAAAATGAAGGTAGACA 3' |  |  |
|  |  |  |  |
| **Promoter** | **Primer Sequence** | **Annealing Temp.(ᵒC)** | **Amplicon size (bp)** |
| Methylated | F-5’ AGGTAAGTTTTTCGGTTGTTAAGC 3’ | 59.8 | 163 |
|  | R-5’ CTAAAAATCGTAATTCTAACGCGTA 3’ |  |  |
| Unmethylated | F-5’ GGTAAGTTTTTTGGTTGTTAAGTGA 3’ | 63 | 163 |
|  | R-5’ ACTAAAAATCATAATTCTAACACATA 3’ |  |  |
|  |  |  |  |
| **Gene** | **mRNA Primer Sequence** | **Annealing Temp.(ᵒC)** | **Amplicon size (bp)** |
| Parkin mRNA | 5’-AGAGCTCCATCACTTCAGGATT-3’ | 58˚C | 230 bp |
|  | 5’-CCCCTTCATGGTACGCTTCT-3’ |  |  |

**Table S3: Summary of mutations obtained along with codon and nucleotide alteration in breast tumor samples**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| S.No. | Tumor Stage | Histological grade[[3]](#footnote-3) | | Lymph node | | Nucleotide alteration | | Amino acid alteration | | PARK-2 methylation | | PARK-2 expression[[4]](#footnote-4) | |
| 1 | III | PD | Present | | 234-A→G | | **Glu**34**Arg** | | Absent | | Absent | |
| 2 | II | MD | Absent | | 234-A→G | | **Glu**34**Arg** | | Present | | Absent | |
| 3 | III | MD | Present | | 234-A→G | | **Glu**34**Arg** | | Present | | Absent | |
| 4  5  6 | II  III  III | WD  MD  PD | Absent  Present  Present | | 234-A→G  234-A→G  234-A→G | | **Glu**34**Arg**  **Glu**34**Arg**  **Glu**34**Arg** | | Present  Absent  Present | | Absent  Absent  Absent | |
| 7 | IV | PD | Absent | | 631-G→A | | **Ser**167**Asp** | | Absent | | Absent | |
| 8 | II | MD | Absent | | 631-G→A | | **Ser**167**Asp** | | Absent | | Absent | |
| 9 | IV | PD | Present | | 631-G→A | | **Ser**167**Asp** | | Absent | | Absent | |

1. WD*:* Well differentiated, MD:Moderately differentiated, PD:Poorly differentiated [↑](#footnote-ref-1)
2. TNBC: Triple negative breast cancer [↑](#footnote-ref-2)
3. WD:Well differentiated, MD:Moderately differentiated, PD:Poorly differentiated [↑](#footnote-ref-3)
4. Protein expression through IHC (Immunohistochemistry) [↑](#footnote-ref-4)