Association between SIRT1 gene rs3758391, rs3740051 and rs12778366 polymorphisms and breast cancer risk in Egyptians

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Silent mating-type information regulator 2 homolog 1(SIRT1) gene expression have been reported to be associated with breast cancer. However, no studies exist on the role of SIRT1 gene polymorphism in breast cancer risk or prognosis. The present study aimed to assess the association between SIRT1 gene polymorphisms and breast cancer in Egyptians. Breast cancer patients exhibited elevated serum SIRT1 levels which varied among different tumor grades. SIRT1 rs3758391 and rs12778366 TT genotypes were more frequent, exhibited higher SIRT1 levels than CC and CT genotypes and were associated with histologic grade and lymph node status. SIRT1 rs12778366 TT genotype also correlated with negative estrogen receptor (ER) and progesterone receptor (PR) statuses. The T allele frequency for both SNPs was higher in breast cancer patients than in normal subjects. Combined GG and AG genotypes of rs3740051 were more frequent, showed higher serum SIRT1 levels than the AA genotype, and were associated with ER and PR expression. Furthermore, inheritance of the G allele was associated with breast cancer. In conclusion, rs3758391 and rs12778366 polymorphisms of SIRT1 gene are associated with breast cancer risk and prognosis in the Egyptian population.