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Methylenetetrahydrofolate Reductase (*MTHFR*) and Angiotensin Converting Enzyme (*ACE*) Gene Variations in Link with Breast Cancer in Jammu Region of Jammu and Kashmir State

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ABSTRACT Molecular genetics of cancer has revealed a probable linkage of both folate-metabolizing enzymes and angiogenic processes generated by the renin-angiotensin system (RAS) with mammary gland tumorigenesis. *MTHFR* (C677T) and *ACE* I/D polymorphism are considered as candidate markers for breast cancer. The objective of the present study was to evaluate the association of *MTHFR* (C677T) and *Alu ACE* I/D gene polymorphisms in females with both benign breast disease (BBD) and breast cancer (BC) in Jammu region of the J&K state. The polymorphisms were genotyped by PCR and RFLP technique. Significant association of *MTHFR* (C677T) polymorphism was observed with BC but not with BBD. The "T" allele of *MTHFR* (C677T) polymorphism was adding nearly 11 folds risk towards of BC (p=0.0003). Regarding *ACE* gene polymorphism, heterozygous genotype (ID) was conferring approximately 2.5 folds risk for BBD (p=0.003). On contrary, *ACE* polymorphism was projecting a protective role towards BC susceptibility. The study concludes *MTHFR* gene to be a potential candidate for breast tumorigenesis.