The fragile histidine triad gene (FHIT) is a candidate tumor suppressor gene at chromosome 3p14.2. Deletions in FHIT gene were reported in different types of cancer including breast cancer. In this study, we investigated the loss of heterozygosity (LOH) incidence that target FHIT genomic structure and chromosome 3p in cancerous and pre-neoplastic lesions of Egyptian breast patients. Genomic DNA was isolated from tumor tissues and their normal counterparts of 55 Egyptian patients diagnosed with breast cancer and 11 patients diagnosed with preneoplastic breast lesions. LOH was detected in 51% of breast cancer cases in at least one microsatellite marker of the four investigated markers. While, none of the markers showed LOH among the pre-neoplastic breast lesions. We also observed a significant association between LOH and invasive ductal carcinoma (IDC) histopathological type while no association observed between LOH and patients' age, tumor grade, or lymph node involvement. We also investigated FHIT gene expression profiles in breast cancer using Oncomine database. We found that FHIT is significantly reduced in all investigated studies. We conclude that, FHIT is underexpressed in breast cancer tissues compared to their normal counterparts due to the extensive allelic loss that is observed in its gene structure.

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