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Data mining analysis of microRNAs in breast carcinogenesis which may extract potential targets for cancer chemoprevention

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The known classes of tumor suppressor genes and oncogenes have recently been expanded to include the microRNA (miRNA) family as small non-coding molecules. The mi-RNAs negatively regulate the stability and translation of target messenger RNAs by selectively occupying. Also it has been implicated in diverse processes such as cellular differentiation, cell-cycle control, apoptosis, and carcinogenesis. Examination of tumor-specific mi-RNA expression profiles has revealed wide spread dysregulation of these molecules in diverse cancers. Although studies addressing their role in carcinogenesis are at an early stage, it is apparent that loss- or gain-of-function of specific mi-RNAs contributes to cellular transformation and carcinogenesis. The available genomic bulk evidences were extracted from The Cancer Genome Atlas (TCGA) by using IlluminaGA_miRNASeq platform in human breast cancer patient samples. After mining among collected data, group of each mi-RNA ID was analyzed through five D/Bs (miRWalk, miRanda, miRDB, RNA22, and TargetScan) on predicted and validated micro-RNA targets. Then, the correlation between the target gene and miRNA ID was double-checked throughout the published papers. In previous research, oncogenes known to have a high correlation with breast cancer related oncogenes (*C-myc*, *erbB-2*, *HER2/neu*, *PRAD-1*, *Nras*, *FGF-4*, and *FGF-3*) and those oncogenes are subject in this study to select relevant microRNA. Research method is not only applied to breast cancer, can be applied to select relevant micro-RNAs in several other tumors and cancers. Function of mi-RNA regulation will be essential to achieve a complete understanding of carcinogenesis and these mi-RNAs would be potential target for breast cancer prevention.

Biography

Lee Jeong-Sang has completed his PhD at Seoul National University College of Pharmacy (Biochemistry major) and Postdoctoral training from Yale University School of Medicine (Comparative Medicine and Pharmacology) for 3 years. He is now serving as the Director of Food Industry Research Institute of Jeonju University. He has published 45 papers in reputed journals and has been serving as an Editorial Board Member of Frontier in Bioscience. He has been studying cancer prevention research especially focusing on gastro-intestinal inflammation. He expanded his expertise to translational research, utilizing human patient samples (gastritis, colitis, gastric and colon cancer).

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