Identification of putative domains that suppress cancer cell growth from cancer target proteins

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To obtain cancer related proteins, we used OMIM database and selected 248 proteins. The proteins are putative drug targets for cancer. Currently used cancer drugs have toxic problem that kills normal cells as well as cancer cells. We employed a new concept that mildly suppresses cell growth for treatment of cancer. To do this, we approached to hire domain information rather than protein information as cancer targets. We selected 45 common proteins that involved in both cancer and cell growth proteins and then obtained 75 domain information of the proteins from Pfam database. We filtered and selected 7 core domains that contain in the two or more target proteins. Although we only use one of the domains as a cancer target, it is a possible to evoke cell toxicity because proteins that have the core domains are ubiquitous in cell. It is, therefore, required to select highly reliable domains. We collected 284 proteins that have one or more core domains from Uniprot database and lied on KEGG pathway. We acquired 19 domains from cancer related pathways in the KEGG pathway. We finally obtained putative common target domains such as HLH and Hormone_recep from both the 7 core domains and the 19 domains. Our results provide a new concept that mildly suppresses cancer cell growth by employing domain information as a cancer target.

Keywords – cancer; protein; domain; cancer cell suppress

** This work was supported by a grant from MEST (The Regional Core Research Program / Chungbuk BIT Research-oriented University Consortium) and by MEST and KOTEF through the Human Resource Training Project for Regional Innovation. **