C1GALT1 promotes malignant behaviors of cancer cells and serves as a potential drug target

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Altered glycosylation is a common feature of cancers. Tumor-associated carbohydrate antigens such as Tn and T antigens are often associated with tumor progression. These carbohydrate antigens have been used to develop cancer markers and vaccines. C1GALT1 is a crucial O-glycosyl transferase that controls the formation of T antigen from Tn antigen. It remains unclear whether C1GALT1 is a potential target for cancer treatment. Here, we showed that C1GALT1 is overexpressed in several types of tumors including ovary, breast and liver cancers. Silencing of C1GALT1 with siRNAs in breast and liver cancer cells suppressed cell viability, migration and invasion as well as tumor growth and metastasis in immunodeficient mice. By using molecular docking, we identified itraconazole as a potential compound that can bind C1GALT1 protein. Importantly, enzyme activity assay and flow cytometry showed that itraconazole significantly inhibited C1GALT1 activity and T antigen expression in various cancer cell lines. Moreover, itraconazole inhibited viability of breast and liver cancer cells. Our results suggest that C1GALT1 can serve as a potential target for the development of anti-cancer drugs.

Biography
Min-Chuan Huang has completed his PhD from University of Muenster, Germany. He is the Professor of Graduate Institute of Anatomy and Cell Biology. He has published more than 33 papers in reputed journals and 7 patents.

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