

## Subcellular Organelle Targeting Photosensitizer

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5,10,15,20-tetrakis(benzo[b]thiophene) porphyrin (BTP) is a newly synthesized hydrophobic photosensitizer. Various compositions of liposomes were used to alter the solubility of BTP. The photocytotoxicity, reactive oxygen species (ROS) generation capabilities and subcellular localization of the various liposomal-BTPs were identified. DNA fragmentation assays and high content screening (HCS) assays were performed in order to shed light on the tumoricidal mechanisms of the liposomal-BTPs. The subcellular localization assays revealed that the localization of liposomal-BTP was dependent on not only the chemical properties of the photosensitizer, but also the properties of the delivery vehicle encapsulating the photosensitizer. The lipid composition of the liposomes seems to be the major contributing factor in determining its subcellular localization. Significant DNA fragmentation was observed in MCF-7 cells treated with a nucleus-localizing liposomal-BTP (DOPC-BTP and DOPE-BTP). Liposomal-BTPs were successful in inducing mitochondrial permeability transition (MPT), increasing cytosolic calcium concentrations, and activating caspase-3/7.

### Biography:

Prof. Joon Myong Song received his Ph.D. in 1997 at Kyushu University, in Japan. He worked as a postdoctoral research fellow from 1998 to 2004 at Iowa State University, Brookhaven National Laboratory and Oak Ridge National Laboratory in United States. At present he is a professor and head of Department of Pharmacy at College of Pharmacy, Seoul National University in South Korea. His research area includes multifunctional nanoparticle for diagnosis and therapy and high-content cell-based drug screening and diagnosis using hyper-multicolor cellular imaging. He has published 110 peer reviewed papers in the top journals, 12 book chapters, and 11 patents.