



## Facilities as Artificial Enzymes to Cancer Cell with Nanoparticles of Supramolecular Complex by Polymer /Anti-Cancer Agents

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Drug Delivery Systems (DDS) based on polymers are widely used as carriers for targeted drug delivery because of their Enhanced Permeability and Retention (EPR) effects and their avoidance of the Reticuloendothelial System (RES). Recent studies have provided new insights into the intracellular distribution and efficacy of polymer-based DDS. For example, triple-labeled confocal microscopy of living cells revealed the localization of micelles in several cytoplasmic organelles, including the mitochondria, but not in the nucleus as shown by Dr. Maysinger. Moreover, the cellular distribution of the micelle could be altered, and could increase the amount of drug delivered to the cells.

The purified enzyme as saccharose by Dr. Willstatter is thought to consist of active groups of low and high molecular weight carriers (1920). Accordingly, supramolecules are now defined as proteins in which the low molecular weight subunit containing the active site is formed into a complex with a high molecular weight carrier.

Supramolecular complex by DEAE-Dextran-MMA Copolymer (DDMC)/Paclitaxel (PTX) was formed using PTX as the guest and DDMC as the host. The DDMC-PTX complex showed superior anti-cancer activity to PTX alone. From our results, the DDMC-PTX complex was not extensively degraded in cells, and achieved good efficacy as an intact supramolecular anti-cancer agent.

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