

## Chitosan-Based Quantum Dot System for Targeted Cancer Cell Therapy

### TECHNOLOGY DESCRIPTION

This technology is a process of improvement towards attenuating medication used to treat cancer (5-Fluorouracil).

### TECHNOLOGY FEATURES

The attenuation is done by using folate conjugated polymer-based quantum dots system as a vehicle for 5-FU delivery imaging of the cancer cells. This technology is suitable to be used as biomedical applications as a sensitive probe for receptor targeting of disease and cell or tissue imaging. This technology is also involves nanocomposite for 5-FU targeted delivery and incorporated with fluorescence contrast agents for targeted imaging of cancer cells. 5-FU loaded nanoparticle significantly reduces tumor growth compared to the free anticancer drugs.

### ADVANTAGES

- As a promising platform for attenuating drug resistance
- able to reduce the toxicity of 5-FU both in vitro and in vivo
- able to reduce tumor growth

### INDUSTRY OVERVIEW

**Prospect: Cancer Drug Manufacturers Pharmaceutical Manufacturers**

This Folic Acid-Conjugated Chitosan-Based Quantum Dot System for Targeted Cancer Cell Imaging and Therapy invention would be a potential product for the cancer drug manufacturers as well as pharmaceutical manufacturers. The cancer drugs market is lucrative since there is a growing prevalence of various type of cancer. For example, cancer is the no. 2 killer in the U.S and in most developing countries after heart disease. Consequently there are increasing demands for biological and targeted drug therapies. This is encouraged by the continuous expiry of key cancer drugs and the rising impact of biosimilars. The cost for treating an individual with cancer with insurance cost on average about USD58,000. The cancer drugs market is expected to garner \$111.9 billion by 2020, registering a CAGR of 7.1% during the forecast period 2014 to 2020. The U.S. accounts for 45 percent of the world cancer market. Emerging economies in Asia mainly China, India, Japan and South Korea are expected to show a steady growth rate in oncology drugs due to the increase in cancer incidence, rise in tobacco consumption and growing population. Some of the private pharmaceutical companies that would be potential customers for this product are such as Pharmaniaga Berhad, Chemical Company of Malaysia Berhad (CCM), Yung Shin Pharmaceutical, Hovid, and Kotra Pharma.



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