



Novel Anticancer Pro-Drugs Activated by Hydrogen Peroxide OTT ID #1277

Applications

Anticancer drugs

Target Problems

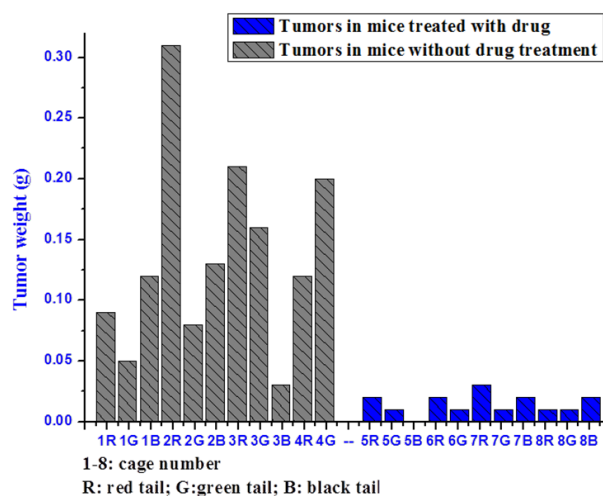
Cancer therapies are often as toxic to healthy cells as to cancer cells. A major focus in the development of new therapeutics is to exploit differences in cancer cells avoiding unwanted side effects.

Key Features

- **Safer** – prodrugs are specifically designed only to be toxic for cancer cells
- **Specific activation** – targeted specifically to the tumor microenvironment
- **Versatile** – triggers can be added to a wide variety of already known cancer drugs
- **Multifunctional** – compounds contain multiple effectors for fighting cancer cells
- **Better drug properties** – prodrug design can aid in pharmaceutical problems of poor solubility, poor chemical stability, insufficient absorption, inadequate blood-brain barrier permeability, and pre-systemic metabolism

Technology

These pro-drug compounds contain “triggers” activated by high levels of hydrogen peroxide deep inside a tumor and provide a new alternative for clinical use. They are ideal for cancer treatment due to their lack of toxicity in the body until they are located within the tumor microenvironment. and contain multiple potent effectors, some of which have been designed to cause DNA damage within the tumor leading to cell death. Several of these compounds have undergone initial testing through the National Cancer Institute’s NCI 60-Cell Line Screen and show promise in causing cell growth inhibition or death in Leukemia, Non-Small Cell Lung Cancer, and breast cancer. Invitro cytotoxicity assays with H₂O₂ inducible compounds have shown growth inhibition of cancer cells at less than 1 micromolar and they induced apoptosis in primary leukemic lymphocytes. A nude mouse xenograft trial for breast cancer showed significant decreases in tumor size in treated mice.



Intellectual Property

United States Utility Patent, Anti-Cancer Agents: [8,962,670](#)

About the Inventor(s)

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