Thermogel for Combination Drug Delivery

View U.S. Patent No. 10,682,415 in PDF format.

WARF: P130338US03

Inventors: Glen Kwon, Hyunah Cho

The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing localized cancer treatments using water-soluble polymer gels that simultaneously release multiple anticancer drugs at a controlled rate for potent antitumor efficacy.

Overview

As cancer research progresses, it is evident that single drug formulations only provide limited success. Developing combination therapies would greatly benefit patients, especially those who must follow dosage regimens for long-term disorders.

Many currently used chemotherapeutics are poorly water soluble, which complicates the process of partnering these drugs with a suitable delivery vehicle. Combining two or three drugs is additionally challenging because of compatibility and stability issues.

New multidrug vehicles must be safer, more effective and biocompatible.

The Invention

UW–Madison researchers have developed hydrogels for delivering drug combinations to cancer patients. The gel is made of a solution of heat-sensitive, biodegradable block copolymers (PLGA-PEG-PLGA) that turn semisolid at body temperature.

The gel can contain a combination of therapeutic agents like rapamycin, paclitaxel and 17-AAG. After being administered to a patient, the gel releases the drugs at a controlled rate, and then biodegrades into nontoxic fragments.

Applications

- Local treatment of cancers, including brain cancer, breast cancer (e.g., lymph node metastasis), pancreatic cancer, head and neck cancer, ovarian cancer and esophageal cancer

Key Benefits

- First multidrug gel of its kind for local cancer treatment
- Extended release of drugs
- Solubility enhancement of poorly water-soluble drugs
- Nontoxic
- Safe and effective
- Biodegradable

Additional Information

For More Information About the Inventors

- Glen Kwon

Related Technologies

- WARF reference number P090383US03 describes an injectable nanovehicle for delivering drug combinations of paclitaxel, rapamycin and 17-AAG.

Tech Fields

- Drug Delivery : Other drug delivery technologies

For current licensing status, please contact Rafael Diaz at rdiaz@warf.org or 608-960-9847