Technology Summary

Researchers at VCU and Georgia Tech have invented a novel polymer hydrogel that controls the localized delivery of therapeutic agents in aqueous solutions. The hydrogel has a rapid reaction (<90 seconds) without the use of a catalyst. This invention allows the controlled time release of therapeutic agents and recombinant proteins without damaging the agent or surrounding tissue. This controlled mechanism of release occurs due to the clickable hydrogel, which maintains stability of the monomer chain. An injectable kit has been developed for the targeted release of agents to control bone growth. Studies determining toxicity show safe delivery of therapeutic agents.

The figures to the right compare the novel hydrogel to an un-polymerized PEG-N3 group. The novel hydrogel demonstrated a more controlled release of the incorporated protein as well as a more targeted delivery. The graph displays controlled fluorescence over a matter of 2 weeks, thereby showing improved performance compared to the PEG-N3 group.

Technology Status

This technology has been prototyped and tested. It has FDA designation as a device. Patent Pending: U.S. (US 2014-0171367 A1) and European (EP2686018 A2) rights available. A publication describing a portion of this technology can be found at the following link:
This technology is available for licensing to industry for further development and commercialization.

Applications

- Delivery of therapeutics to control bone growth via injectable hydrogels
- Controlled and targeted release of therapeutic agents

Advantages

- Rapid reaction without implementing a catalyst (<90 sec)
- Toxicology studies reflect safe delivery of therapeutic agents and recombinant proteins
- Localized delivery of recombinant proteins

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