

Polymer Hydrogels for In Vivo Drug Delivery Applications

The technology

Researchers at Virginia Commonwealth University 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.

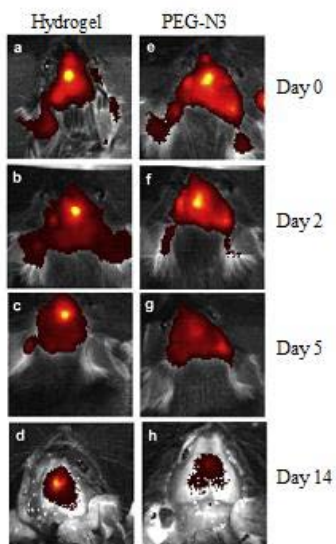


Figure 1. Comparison between the novel hydrogel to an un-polymerized PEG-N3 group. The novel hydrogel demonstrated a more controlled release of the incorporated protein as well as a more targeted delivery.

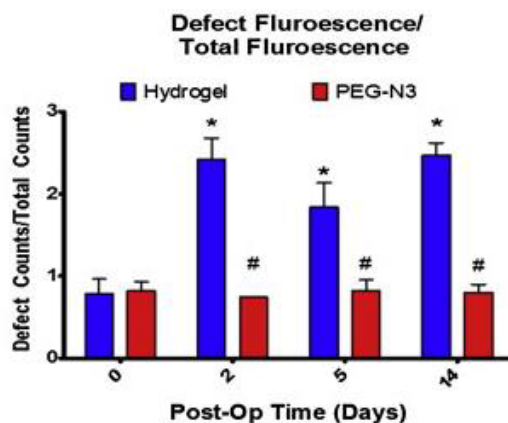


Figure 2. The graph displays controlled fluorescence over a matter of 2 weeks, thereby showing improved performance compared to the PEG-N3 group.

Benefits

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

Applications

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

Patent status:

Patent issued: U.S. rights are available. 10,039,831

License status:

This technology is available for licensing to industry for further development and commercialization.

Category:

Biomedical

VCU Tech #:

14-031

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External Resources:

[Hermann et. al. \(2014\)](#)

Contact us about this technology

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