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Authors: Wei Wei, Junjian Li, Xiaoliang Qi, Yin Zhong, Gancheng Zuo, Xihao Pan, Ting Su, Jianfa Zhang, Wei Dong



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# Synthesis and Characterization of a Multi-Sensitive Polysaccharide Hydrogel for Drug Delivery

*Wei Wei, Junjian Li, Xiaoliang Qi, Yin Zhong, Gancheng Zuo, Xihao Pan, Ting Su, Jianfa Zhang, and Wei Dong\**

Center for Molecular Metabolism, Nanjing University of Science & Technology, Nanjing 210094, China

\*Fax: +86-25-84318533. Phone: +86-25-84318533. E-mail: weidong@njust.edu.cn .

## **Highlights:**

A smart polysaccharide hydrogel was synthesized and characterized for drug delivery. Semi-IPN technique was used to keep properties of both polymers. Hydrogel sensitive to temperature, pH, and ionic strength. The hydrogel is cell compatible. Drug release rates can be controlled.

**ABSTRACT:** Salecan is a novel water soluble polysaccharide produced by a salt-tolerant strain *Agrobacterium* sp. ZX09. Poly(dimethylaminoethyl methacrylate) (PDMAEMA) is a pH, thermo, and ionic strength multi-sensitive polymer with anti-bacterial property. Here, we report a semi-interpenetrating polymer network (semi-IPN) hydrogel based on salecan and PDMAEMA. The obtained hydrogel is simultaneous sensitive to pH, ionic strength and temperature: the swelling ratio maximizes at pH 1.2 and shrinks at pH value greater

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