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Magnetic field-driven drug release from modified iron oxide-integrated polysaccharide hydrogel

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Abstract: Salecan is a novel water-soluble extracellular β -glucan and suitable for the hydrogel preparation due to its excellent physicochemical and biological properties. The present article describes the fabrication and characterization of a pH/magnetic field-driven hydrogel based on salecan-g-poly(vinylacetic acid-co-2-hydroxyethyl acrylate) [poly(VA-co-HEA)] copolymer and Fe_3O_4 @Agarose nanoparticles for drug release testing. Vibrating sample magnetometer characterization verified that integration of Fe_3O_4 @Agarose nanoparticles in the copolymer provided the sensitivity to magnetic fields. The doxorubicin hydrochloride (DOX) release test showed a pH/magnetic field-triggered and sustained release property, and the release could be accelerated under mildly acidic conditions or the presence of an external magnetic

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