

BIOAPPLICATION OF SUPERPARAMAGNETIC IRON OXIDE ENCAPSULATED WITH N-[(2- HYDROXY-3-TRIMETHYLAMMONIUM) PROPYL] CHITOSAN CHLORIDE

S-T. WU¹, Z-T. TSAI², J-H. JUANG², J-J. WANG²,
C-L. LIU³ AND C. R. SHEN^{1, 2*}

¹Department of Medical Biotechnology and Laboratory Science, Chang Gung University, Kweishan, Taoyuan, Taiwan. e-mail: crshen@mail.cgu.edu.tw

²Molecular Imaging Center, Chang Gung Memorial Hospital, Kweishan, Taoyuan, Taiwan.

³Graduate School of Biochemical Engineering and Department of Chemical Engineering, Mingchi University of Technology, Taishan, Taipei, Taiwan.

Superparamagnetic iron oxide (SPIO) and its colloidal solution of magnetic nanoparticles (ferrofluid) appear to contribute the magnetite imaging applications. Here we present an aqueous ferrofluid in physiological pH and its cell tracking potential. was adapted to synthesize N-[(2-hydroxy-3-trimethyl ammonium) propyl] chitosan chloride (HTCC)-coated SPIO was synthesized by adapting an in situ coating method.

Characterization results reveal their features, including z-average diameter of 272.2 nm; polydispersity index (PDI) of 0.141; (3) zeta potential of 11.8 mV; iron concentration of 5.4 mg Fe/mL; stable in both water and normal saline; uptake by a variety of cell lines and little cytotoxicity. Finally, the islet grafting demonstration led to the potential usefulness of this product as a MRI contrast agent for cell tracking.

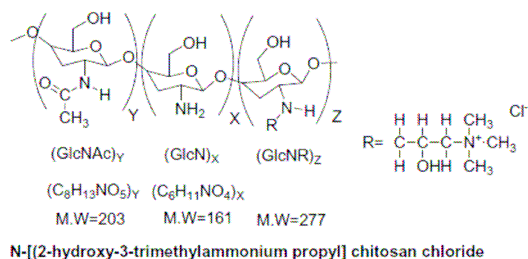


Figure 1. The chemical structure of N-[(2-hydroxy-3-trimethylammonium) propyl] chitosan chloride (HTCC).

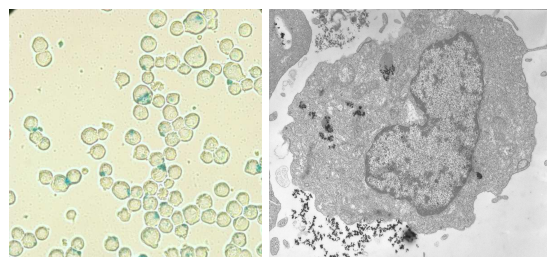


Figure 2. Cellular iron content assessed by Prussian blue staining TEM analysis of HTCC-SPIO loading cells.

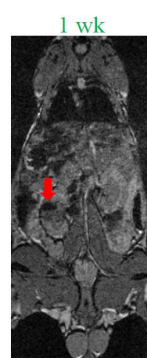


Figure 3. A *in vivo* MR image of grafted islets.

REFERENCES

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