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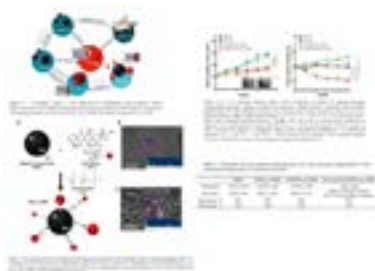
# MATERIALS SCIENCE AND ENGINEERING

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## Chitosan-coated magnetic nanoparticles modified with folate use for doxorubicin released

Yu-Chen Fa, Zi-Xian Lia and Meng-Chia Liu  
National Sun Yat-sen University, Taiwan

In clinical tumor therapy, chemotherapeutic routes have caused severe side effects; current delivery methods are unsatisfactory. Successful design of a remotely folate (FA)-grafted chitosan (CS)-coated magnetic nanoparticle (MNP) with low toxicity, has been achieved (Figure 1). A chemotherapeutic drug such as doxorubicin (DOX), is loaded in the MNP-based matrix (FA-grafted CS-DOX-TPP-MNP), which is coated by an activated target tumor molecule of FA-grafted CS biopolymer with the inclusion of tripolyphosphate (TPP) as a linker (Figure 2). The resultant nanocomplexes exhibited random aggregates (~240 nm) and zeta potential (-24.9 mV) (Table 1). In vivo experiments using athymic BALB/c nude mice with human glioblastoma U87 cells in a subcutaneous tumor model revealed that magnetic guidance of FA-grafted CS-DOX-TPP-MNP, injected via the tail vein, significantly decreased tumor growth (Figure 3). This manuscript demonstrates the feasibility of magnetizing control of FA-grafted CS-DOX-TPP-MNP to enhance the localization of drug release.



### Biography

Yu-Chen Fa is studying in Institute of Medical Science and Technology, National Sun Yat-sen University. She will obtain a master's degree in June 2018. Her research focuses on the development of drug delivery devices, drug control release, remote delivery, tumor associated environment and tumor therapy. Yu-Chen Fa has her expertise in evaluation and passion in improving the clinical tumor therapy. She successfully designs a magnetic nanoparticle with low toxicity and using in tumor therapy. She also completed her research in localized photodynamic therapy to overcome multidrug resistance in breast cancer cells. The research results have been published in *Bioconjugate Chemistry*, 2017.

yefa.01@gmail.com

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