

## Accepted Manuscript

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PII: S0021-9797(16)30982-1  
DOI: <http://dx.doi.org/10.1016/j.jcis.2016.11.097>  
Reference: YJCIS 21825

To appear in: *Journal of Colloid and Interface Science*

Received Date: 4 September 2016  
Revised Date: 28 November 2016  
Accepted Date: 28 November 2016

Please cite this article as: N. Ma, J. Liu, W. He, Z. Li, Y. Luan, Y. Song, S. Garg, Folic acid-grafted bovine serum albumin decorated graphene oxide: an efficient drug carrier for targeted cancer therapy, *Journal of Colloid and Interface Science* (2016), doi: <http://dx.doi.org/10.1016/j.jcis.2016.11.097>

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# **Folic acid-grafted bovine serum albumin decorated graphene oxide: an efficient drug carrier for targeted cancer therapy**

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## **Abstract**

Targeting drug carrier systems based on graphene oxide (GO) are of great interest, since it can selectively deliver anticancer drugs to tumor cells, and enhance therapeutic activities with minimized side effects. However, direct grafting target molecules on GO usually results in aggregation of physiological fluid, limiting its biomedical applications. Here, we propose a new strategy to construct targeting GO drug carrier using folic acid grafted bovine serum albumin (FA-BSA) as both the stabilizer and targeting agent. FA-BSA decorated graphene oxide-based nanocomposite (FA-BSA/GO) was fabricated by the physical adsorption of FA-BSA on GO, which was developed as a targeting drug delivery carrier. FA-BSA/GO as the drug carrier was associated with anticancer drug doxorubicin (DOX) through  $\pi$ - $\pi$  and hydrogen-bond interactions, resulting in high drug loading (up to 437.43  $\mu$ g DOX/ mg FA-BSA/GO). FA-BSA/GO/DOX systems demonstrated pH responsive and sustained drug release. The hemolysis ratio of FA-BSA/GO was less than 5%, demonstrating its safety as drug carrier for intravenous injection. Moreover, *in vitro* cell cytotoxicity and cellular uptake analysis suggested that the constructed FA-BSA/GO/DOX

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