

Author's Accepted Manuscript

Selective Enrichment of
Glycopeptides/Phosphopeptides Using $\text{Fe}_3\text{O}_4@\text{Au}-\text{B}(\text{OH})_2@m\text{TiO}_2$ Core-Shell Microspheres

Dongpo Xu, Guoquan Yan, Mingxia Gao, Chunhui Deng, Xiangmin Zhang



PII: S0039-9140(17)30030-9
DOI: <http://dx.doi.org/10.1016/j.talanta.2017.01.030>
Reference: TAL17212

To appear in: *Talanta*

Received date: 9 September 2016
Revised date: 6 January 2017
Accepted date: 9 January 2017

Cite this article as: Dongpo Xu, Guoquan Yan, Mingxia Gao, Chunhui Deng and Xiangmin Zhang, Selective Enrichment of Glycopeptides/Phosphopeptides Using $\text{Fe}_3\text{O}_4@\text{Au}-\text{B}(\text{OH})_2@m\text{TiO}_2$ Core-Shell Microspheres, *Talanta*, <http://dx.doi.org/10.1016/j.talanta.2017.01.030>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting galley proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Selective Enrichment of Glycopeptides/Phosphopeptides Using $\text{Fe}_3\text{O}_4@Au\text{-B(OH)}_2@m\text{TiO}_2$ Core-Shell Microspheres

Dongpo Xu, Guoquan Yan, Mingxia Gao, Chunhui Deng and Xiangmin Zhang*

Department of Chemistry and Institutes of Biomedical Sciences, Fudan University, Shanghai 200433, China

Abstract:

In this work, the bifunctional $\text{Fe}_3\text{O}_4@Au\text{-B(OH)}_2@m\text{TiO}_2$ core-shell core-shell microspheres were designed and synthesized for the selective enrichment of glycopeptides/ phosphopeptides. Due to the bifunctional property of the titanium dioxide and the boronic acid group, the microspheres were successfully applied to the enrichment of phosphopeptides and glycopeptides, evaluated by capturing phosphopeptides from tryptic digestion of model phosphoprotein bovine β -casein diluted to $2.0 \text{ pg } \mu\text{L}^{-1}$ ($8.0 \times 10^{-17} \text{ mol } \mu\text{L}^{-1}$) and glycopeptides from tryptic digestion of model glycoprotein horseradish peroxidase (HRP) diluted to $80 \text{ pg } \mu\text{L}^{-1}$ ($2.0 \times 10^{-15} \text{ mol } \mu\text{L}^{-1}$). The enrichment selectivity of the bifunctional microspheres was evaluated by capturing phosphopeptides from a peptide mixture of β -casein and bovine serum albumin (BSA) with the molar ratio of 1:1000 ($4.2 \times 10^{-12} \text{ mol}$ of β -casein and $4.2 \times 10^{-9} \text{ mol}$ of BSA in $100 \text{ } \mu\text{L}$) and glycopeptides from a peptide mixture of HRP and BSA up to the ratio of 1:100 ($5.0 \times 10^{-12} \text{ mol}$ of HRP and $5.0 \times 10^{-10} \text{ mol}$ of BSA in $100 \text{ } \mu\text{L}$).

Keywords : boronic acid, titanium dioxide, glycopeptides, phosphopeptides, enrichment, MALDI-TOF mass spectrometry

Introduction

As the most important and abundant post translational modification of proteins, protein phosphorylation and glycosylation play the important role in biological processes including immune response, signal transduction, and particularly in cancer

Download English Version:

<https://daneshyari.com/en/article/5141091>

Download Persian Version:

<https://daneshyari.com/article/5141091>

[Daneshyari.com](https://daneshyari.com)