Conjugation of manganese ferrite nanoparticles to an anti-Sticholysin monoclonal antibody and conjugate applications


* Institute of Materials Science and Technology, University of Havana, Havana, Cuba
b Center for Proteins Study, Faculty of Biology, University of Havana, Havana, Cuba
* Center for Applied Science and Advanced Technology of INI, Lengua Unit, Mexico, DF, Mexico

ABSTRACT

In this study the potential applications of manganese ferrite (MnFe₂O₄) nanoparticles for bioanalytical applications are evaluated. These magnetic nanoparticles show peroxidase-like activity similar to that reported for magnetite nanoparticles and peroxidase enzyme. Based on this finding, colloidal suspensions of manganese ferrite were conjugated to an anti-Sticholysin II (StII) monoclonal antibody. The resulting conjugate was then used as a revealing tool in a novel immunoassay for StII detection. From the combined magnetic properties and specific recognition of anti-StII-MnFe₂O₄ conjugate, Sticholysins were separated from whole aqueous extract of marine anemone obtaining 75% of purity. The results herein discussed illustrate the potential applications of manganese ferrite nanoparticles as bioanalytical tools for immunoassay and protocol for protein separation.