

Accepted Manuscript

Interactions of hemin with bovine serum albumin and human hemoglobin: A fluorescence quenching study

Magdalena Makarska-Bialokoz



PII: S1386-1425(17)30973-3
DOI: doi:[10.1016/j.saa.2017.11.063](https://doi.org/10.1016/j.saa.2017.11.063)
Reference: SAA 15645

To appear in: *Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy*

Received date: 18 September 2017

Revised date: 26 November 2017

Accepted date: 29 November 2017

Please cite this article as: Magdalena Makarska-Bialokoz , Interactions of hemin with bovine serum albumin and human hemoglobin: A fluorescence quenching study. The address for the corresponding author was captured as affiliation for all authors. Please check if appropriate. Saa(2017), doi:[10.1016/j.saa.2017.11.063](https://doi.org/10.1016/j.saa.2017.11.063)

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 proof before it is published in its final 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.

**Interactions of hemin with bovine serum albumin and human hemoglobin:
a fluorescence quenching study**

Magdalena Makarska-Bialokoz

Department of Inorganic Chemistry, Maria Curie-Skłodowska University

M. C. Skłodowska Sq. 2, 20-031 Lublin, Poland

e-mail: makarska@hektor.umcs.lublin.pl

Abstract

The binding interactions between hemin (Hmi) and bovine serum albumin (BSA) or human hemoglobin (HHb), respectively, have been examined in aqueous solution at pH=7.4, applying UV-vis absorption, as well as steady-state, synchronous and three-dimensional fluorescence spectra techniques. Representative results received for both BSA and HHb intrinsic fluorescence proceeding from the interactions with hemin suggest the formation of stacking non-covalent and non-fluorescent complexes in both the Hmi-BSA and Hmi-HHb systems, with highly possible concurrent formation of a coordinate bond between a group on the protein surface and the metal in Hmi molecule. All the values of calculated parameters, the binding, fluorescence quenching and bimolecular quenching rate constants point to the involvement of static quenching in both the systems studied. The blue shift in the synchronous fluorescence spectra imply the participation of both tryptophan and tyrosine residues in quenching of BSA and HHb intrinsic fluorescence. Depicted outcomes suggest that hemin is supposedly able to influence the physiological functions of BSA and HHb, the most important blood proteins, particularly in case of its overuse.

Download English Version:

<https://daneshyari.com/en/article/7670154>

Download Persian Version:

<https://daneshyari.com/article/7670154>

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