Pneumococcal HxxHxH triad - Copper(II) interactions - How important is the 'x'?

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Rok wydania

2019

Czasopismo

Inorganica Chimica Acta

Numer woluminu

488

Strony

255-259

DOI

10.1016/j.ica.2019.01.029

Kolekcja

Naukowa

Język

Angielski

Typ publikacji

Artykuł

Streszczenie

PhtA, a *Streptococcus pneumoniae* polyhistidine triad protein, which contributes to virulence by interacting with components of the immune system, by being involved in adherence of bacteria and in Zn(II) uptake, contains five copies of the HxxHxH sequence. Since this motif is also present in numerous Cu(II) binding proteins, we decided to focus on the bioinorganic chemistry of copper(II) with three of such PhtA repeats, in order to understand which of the PhtA triads binds Cu(II) with the highest affinity and explain if Cu(II) would be able to outcompete Zn(II) from its native binding site under physiological metal concentrations.

Adres publiczny

https://doi.org/10.1016/j.ica.2019.01.029

Strona internetowa wydawcy

http://www.elsevier.com