

Ferrichrome has found its match : biomimetic analogues with diversified activity map discrete microbial targets.

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Siderophores provide an established platform for studying molecular recognition principles in biological systems. Herein, the preparation of ferrichrome (FC) biomimetic analogues varying in length and polarity of the amino acid chain separating between the tripodal scaffold and the pendent Fe^{III} chelating hydroxamic acid groups was reported. Spectroscopic and potentiometric titrations determined their iron affinity to be within the range of efficient chelators. Microbial growth promotion and iron uptake studies were conducted on *E. coli*, *P. putida* and *U. maydis*. A wide range of siderophore activity was observed in the current series: from a rare case of a species-specific growth promotor in *P. putida* to an analogue matching FC in cross-phylum activity and uptake pathway. A fluorescent conjugate of the broad-range analogue visualized siderophore destination in bacteria (periplasmic space) vs. fungi (cytosol) mapping new therapeutic targets. Quantum dots (QDs) decorated with the most potent FC analogue provided a tool for immobilization of FC-recognizing bacteria. Bacterial clusters formed around QDs may provide a platform for their selection and concentration.

Słowa kluczowe

biomimetic chemistry, ferrichrome, fluorescent conjugates, quantum dots, siderophores

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