POSTER

Iron availability modulates biofilm formation by *Staphylococcus epidermidis*

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Abstract

Iron is regarded as essential to virtually all microorganisms, although the role of this nutrient on biofilm formation by many bacterial species is unknown or poorly explored. This is the case of *Staphylococcus epidermidis*, a major inhabitant of the human skin, which has also become an important nosocomial pathogen. Interestingly, biofilm formation has been regarded as a pivotal feature in both commensal and clinical isolates. Recent results from our group have pointed out iron uptake as an important mechanism for *S. epidermidis* biofilms survival. The present work was therefore aimed at elucidating the effect of iron availability in *S. epidermidis* biofilm formation.

To achieve that, biofilm formation of three *S. epidermidis* isolates was evaluated when cultured in medium presenting different iron availability levels. Interestingly, under physiological iron concentrations, biofilm formation and planktonic growth were not affected but supraphysiological concentrations displayed an inhibitory effect both on biofilm and planktonic growth. Importantly, biofilm formation and planktonic growth was also inhibited by chelation of the iron present in the culture medium, which was completely restored after iron addition in a dose-dependent manner. Our findings provide clear evidence that iron plays a pivotal role on *S. epidermidis* biofilm formation, and this seems to be primarily related with its effect on the bacterial growth rate. Additionally, the iron concentration range supporting bacterial growth and further biofilm development was found to be very narrow, a feature that may be explored in the future for biofilm control purposes.

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