

# Initial adhesion of biofilm forming pathogens to central venous catheters: the role of blood serum proteins

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Microbial biofilms formed on implanted medical devices such as central venous catheters (CVC) are of major clinical importance. The interaction of biofilm forming microorganisms with the implanted material is a key factor in disease pathogenesis. Although a wealth of information exists on how major biofilm forming pathogens, such as *Staphylococcus aureus* and *Candida albicans*, adhere to clinically relevant implant materials, only little is known about how body fluid components that rapidly cover the implanted material will influence these initial adhesion processes. Hence, we aimed here to study by single cell force spectroscopy whether and how blood serum influences the initial adhesion of *S. aureus* and *C. albicans* to CVC material.

First results indicate that adhesion of both species is affected by blood serum. While *S. aureus* cells brought into contact with the CVC surface displayed a mean adhesion force of  $\sim 1.5$  nN to this type of material, bacterial cells preincubated in serum adhered to the CVC with a mean adhesion force  $\leq 0.5$  nN. *C. albicans* yeast cells, on the other hand, adhered more firmly to the CVC when preincubated in blood serum, probably due to the formation of an initial hyphae that is induced by the presence of blood serum proteins.

Both findings indicate that host factors are likely to have a marked impact on the microbial adhesion to medical devices.