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| Resumo | *Streptococcus pneumoniae* is a bacterium of great global importance, responsible for more than one million deaths per year. This bacterium is commonly acquired in the first years of life and colonizes the upper respiratory tract asymptomatically by forming biofilms that persist for extended times in the nasopharynx. However, under conditions that alter the bacterial environment, such as viral infections, pneumococci can escape from the biofilm and invade other niches, causing local and systemic disease of varying severity. The polyamine transporter PotABCD is required for optimal survival of the organism in the host. Immunization of mice with recombinant PotD can reduce subsequent bacterial colonization. PotD has also been suggested to be involved in pneumococcal biofilm development. Therefore, in this study we aimed to elucidate the role of PotABCD and polyamines in pneumococcal biofilm formation. First, the formation of biofilms was evaluated in the presence of exogenous polyamines–the substrate transported by PotABCD–added to culture medium. Next, a *potABCD*-negative strain was used to determine biofilm formation in different model systems using diverse levels of complexity from abiotic surface to cell substrate to *in vivo* animal models and was compared with its wild-type strain. The results showed that adding more polyamines to the medium stimulated biofilm formation, suggesting a direct correlation between polyamines and biofilm formation. Also, deletion of *potABCD* operon impaired biofilm formation in all models tested. Interestingly, more differences between wild-type and mutant strains were observed in the more complex model, which emphasizes the significance of employing more physiological models in studying biofilm formation |
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