A colistin coating to prevent biomaterial-associated infections

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Introduction

Bacterial colonisation of indwelling devices followed by biofilm formation remains a serious concern in modern health care. Device-associated infections are difficult to treat because cells within a biofilm are less susceptible to antimicrobial treatment and to host immune system. The emergence of multidrug resistant bacteria and the lack of alternative therapeutic options have led to the revival of colistin. Although effective, some concerns have been raised about its toxicity and the development of bacterial resistance. Colistin covalent immobilization onto a biomaterial surface may overcome these drawbacks as it avoids patient exposure to sub-inhibitory concentrations.

Methods

Two-step approach

Dopamine + pDA

Polydopamine film on PC

Colistin coated PC

One-step approach

Dopamine + Colistin

PC

pDA

Conclusions

- Polydopamine was successfully exploited to functionalize biomaterial surfaces with colistin to impart them with antimicrobial properties.
- Colistin-coated surfaces were effective at killing bacteria on contact.