"Antimicrobial and antithrombotic activity is achieved through the integration of a nitric oxide donor, while the nonfouling surface is achieved using a covalently bound phosphorylcholine-based polyzwitterionic copolymer topcoat" Singha et al (2020).

Abstract:
The development of nonfouling and antimicrobial materials has shown great promise for reducing thrombosis and infection associated with medical devices with aims of improving device safety and decreasing the frequency of antibiotic administration. Here, the design of an antimicrobial, anti-inflammatory, and antithrombotic vascular catheter is assessed in vivo over 7 d in a rabbit model. Antimicrobial and antithrombotic activity is achieved through the integration of a nitric oxide donor, while the nonfouling surface is achieved using a covalently bound phosphorylcholine-based polyzwitterionic copolymer topcoat. The effect of sterilization on the nonfouling nature and nitric oxide release is presented. The catheters reduced viability of Staphylococcus aureus in long-term studies (7 d in a CDC bioreactor) and inflammation in the 7 d rabbit model. Overall, this approach provides a robust method for decreasing thrombosis, inflammation, and infections associated with vascular catheters.

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