

Novel Modification of Medical Prostheses

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Technology description

In-dwelling medical devices such as catheters and orthopedic devices are becoming essential to patient care; however, their benefit is often offset by infectious complications. Colonization of bacteria/fungi on the surfaces of the implant or other parts of the device can produce serious patient problems, including the need to remove and/or replace the implanted device and to vigorously treat secondary infective conditions. Drs. Darouiche and Mansouri have developed a novel two-layer coating method for both metallic and non-metallic medical devices and implants. The first layer comprises of a therapeutic/antimicrobial agent, an acidic component, and a matrix component, such as hide powder and collagen. After air drying, a second protective layer comprising a cyanoacrylate or its derivatives will be applied on top of the first layer to prevent its rapid dissolution in an aqueous environment. Comparing to existing methods, this technology is superior physically, chemically, and biologically. First, the coating on the devices is more hardwearing and resilient than the previous methods. Moreover, it enables the device to release the drugs, such as antibiotics, in a concentration-controlled fashion over an extended period of time. In addition, all the layer components are biocompatible.

Advantages

- A durable and resilient two-layer coating that is applicable to both metallic and non-metallic surface
- Slow release of antimicrobial or other therapeutic agents for an extended period of time
- All the coating compositions are safe, bio-friendly, and inexpensive
- Fast coating process

Institution

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