Drug-Eluting Medical Device Coatings

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Technology description

Researchers at the University of New Mexico have developed medical device coatings for local drug delivery.

These coatings may be applied to various polymer surfaces, with medical insertion devices as the primary focus. The medical coating may be applied using a variety of well accepted and understood pharmaceutical manufacturing techniques, either during or post production. Once administered to a patient via device placement, the coating may release a medicament or substance to local structures. The substance can be analyzed and effectively determine the rate and volume of release; with one prototype example the releasing 90% of a drug within 60 seconds (for immediate onset of action). Various reagents and factors may also be integrated into the coating to provide additional capabilities or features to the surface. For example, when utilized on endotracheal tubes, the shelf stable matrix medical coating is designed to limit pain, inflammation, and swelling during intubation.

Background

Medical coatings must meet high standards when incorporated onto medical device surfaces. Importantly coatings must be sterile, biocompatible, and/or antimicrobial. Anappropriate medical coating can drastically improve the potential for accurate diagnoses, reduce or eliminate surface binding bacterial, as well as reduce or eliminate irritation or rejection of the device within the body. Drug delivery coatings, in particular, are of high interest due to targeted localized control of drug delivery. In general, drug delivery coatings enable drugs or substances to be integrated within a coating matrix; enabling the physician or investigator to control drug delivery rates and device surface properties. For instance, when an insertion device is directed into a patient, the ability to rapidly and effectively release a drug into a designated area can be highly beneficial. The physician can accurately dispense the drug within the vicinity of the target area: reducing swelling, inflammation, and pain typically endured from uncoated devices or directly appliedoff-label drug products. Thus, there is a need for device coatings capable of and localized drug delivery in a rapid or controlled fashion.

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Application area

Drug- or substance-eluting coating
Extensive coating application options (well accepted and understood pharmaceutical manufacturing techniques)
Integration of additional substances or factors to enhance surface properties
Potential to reduce inflammation, pain, and swelling in intubated patients
Applications to coat a variety of medical devices for localized drug delivery (e.g. catheters, tracheobroncal, gastrostomy (feeding tube), nasogatric, endoscopy, myringotomy, colonoscopy)

Institution

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