Novel Nitric Oxide Releasing Surgical Sutures, Bandages and Fabrics

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Technology description

Description

The technology is novel nitric oxide (NO) releasing acrylonitrile-based copolymer and terpolymer fibers that can be used as surgical sutures or non-woven bandages and fabrics that enhance wound healing. These copolymers have a higher NO loading capacity per gram than other known NO releasing acrylonitrile polymers. In addition, the fibers are coated with biodegradable polymers that allow for the timed, slow release of NO when the suture, bandage or fabric is in contact with the wound. These fibers have a long shelf life and when used in wound closure applications have the potential to deliver therapeutic NO specifically to the wound area, thereby promoting wound healing. Animal studies have been conducted which confirm the efficacy of these bandages for enhanced wound healing.

Background

Implantable medical devices (stents, pacemakers, wire-guides, sutures etc.) that are in constant contact with a patient’ s vascular system have been known to cause thrombosis and platelet aggregation both internally and on the device itself, resulting in clinical complications such as restenosis, infections and/ or reduction in device performance.

NO prevents platelet aggregation, promotes vasodilation, has antimicrobial properties and has been demonstrated to enhance wound healing. Using medical devices that release NO specifically to the wound over time will help prevent infections and promote wound healing. These NO releasing sutures can be used to both close surgical incisions or wounds and enhance healing. According to Freedonia, the wound management market is estimated to increase at 5.3% annually to 39.3 billion in 2016. The market for Wound closures and bandages is projected to reach 15.2 billion and 10 billion respectively, in 2016.

Application area

·Wound care & management	Surgical sutures and bandages for wound closure, treatment and chronic wound management.
·Safe surgical implants	Coating of surgical implants with the co-polymer will mitigate the risk of thrombosis and restenosis

United States patent 9,017,653 issued on April 28, 2015.

Advantages

·Higher EfficiencyHigher NO loading capacity; efficient and timed release of NO
·Customizable Fiber diameter can be customized for different applications

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