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Technology Transfer Office

Compositions and Methods for Reducing or Preventing Medical Device-Related Infections

Researchers at the University of South Florida have developed novel methods to reduce microbial infections obtained from a heparinized surface.

In pediatric oncology, catheter-related bloodstream infections remain the most common cause of infections developed during hospital stays. Due to these high rates, numerous strategies have been developed to combat these infections. Ethanol is a popular treatment option because it contains both antibacterial and antifungal properties. Further, ethanol has proven to be effective in the treatment of refractory infections and does not cause any symptoms with use in children. However, recent clinical trials have shown that intraluminal ethanol use may allow for the formation of a solid material that can clog many intravenous devices. Subsequent studies have shown that this problem is the result of the precipitation of ethanol with heparin, a necessary anticoagulant.

USF researchers have developed a method called Sequential Escalation of Ethanol (SEE Lock) capable of reducing microbial infections obtained from a heparinized surface and significantly improving heparin compatibility. A composition comprised of a mucilage extract from an *Opuntia ficus-indica* species was also developed. These alternative alcohol preparation methods prevent catheter-related bloodstream infections and are also heparin-compatible. These prophylactic solutions are suitable for pediatric administration and contain both antibacterial and antifungal properties. They are therefore an improvement upon current methods. These compositions will benefit many patients with chronic diseases that require constant vascular access.

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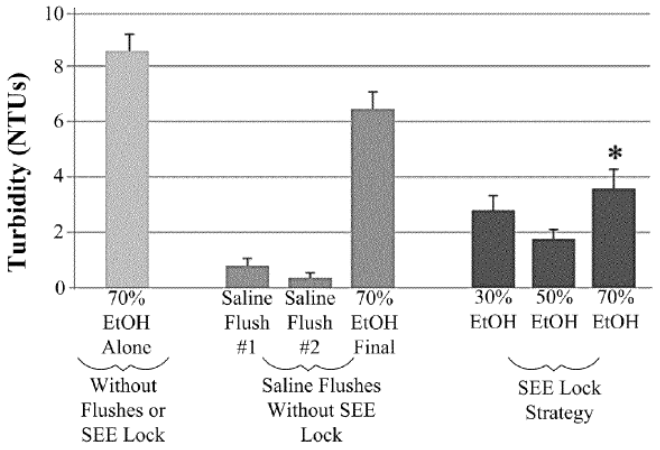
ADVANTAGES:

- **Heparin-compatible**
- **Prevents infections**
- **Antibacterial and antifungal properties**
- **Reduces clogs in intravenous devices**

A Heparin-Compatible Solution to Reduce the Number of Catheter Related Infections



SEE Lock Strategy Decreases Heparin Precipitation (indicated by turbidity) by ~60% in a Laboratory Model of Catheter-Bound Heparin

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