

6-2014-3029 | Nano-mupirocin for injection
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Categories	Drug delivery, Infectious disease
Development Stage	Pre-clinical efficacy studies
Patent Status	Patent pending
Market	The invention is related to the field of antibiotic resistant bacteria (N. gonorrhoeae, MRSA, pneumoniae)

Highlights

A new parenteral antibiotic nano-drug based on a safe, highly efficacious mupirocin which in its current application is used only topically. Mupirocin, is an antibiotic with a unique mode of action, which due to its unfavourable PK and ADME properties cannot be used parentally. We modified these properties by transforming mupirocin to a nano-drug (Nano-mupirocin) by remote loading of the drug using a unique proprietary way into pegylated nano-liposomes.

Our Innovation

Mupirocin has a unique mode of action which is not shared by any other therapeutically available antibiotics: mupirocin inhibits isoleucyl tRNA synthetase required for bacterial multiplication. Therefore, cross resistance with other antibiotics is not expected. It is active against pathogens that were determined to have a potential to pose a serious and urgent threat to public health including methicillin-resistant Staphylococcus aureus, Streptococcus pneumoniae and Neisseria gonorrhoeae.

The pharmacokinetic profile of Nano-mupirocin vs free mupirocin showed superior profile. After injection of Nano-mupirocin, mupirocin plasma levels were above its MIC 24 h after administration, while after injection of the free drug it was cleared from the circulation after 15-30 min.

We showed efficacy of Nano-mupirocin in a mouse model of necrotizing fasciitis. It was active upon injection of a single Nano-mupirocin dose 2-3 h before the bacterial challenge as well as 1- 5 h after the bacterial challenge.

Clinical Implications:

Nano-mupirocin may be useful for the treatment of gonorrhea and for deep infections such as airway infections in CF patients, osteomyelitis, pneumonia and bacterial endocarditis.

The Opportunity

- * Generating Antibiotics Incentives Now (GAIN), 2012, provides five years of protection from generics, and an accelerated FDA approval process for antibiotics against specific bacteria.
- * Mupirocin is an approved drug. It may therefore be suitable for 505(b)(2) application

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Patent Status

Granted US 10,004,688; Europe [3142642](#); India 351893; Japan

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