



Probiotic for Wound Healing

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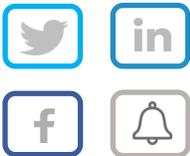
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References:

J. Nat. Prod., 2015, 78 (4), pp 924-928 . ([link](#))

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Overview: Antibiotics help prevent bacterial infection. However, most antibiotics are broadly acting, killing or preventing growth of both good and bad bacteria and opening the door for drug-resistant microbes to cause infection. A probiotic bacteria has been shown to help prevent infection by multidrug-resistant Staph. aureus (MRSA) while keeping normal skin microbiota in place. Treatment of wounds with this probiotic could help prevent infection, aid in wound healing, and prevent development of antibiotic resistance.

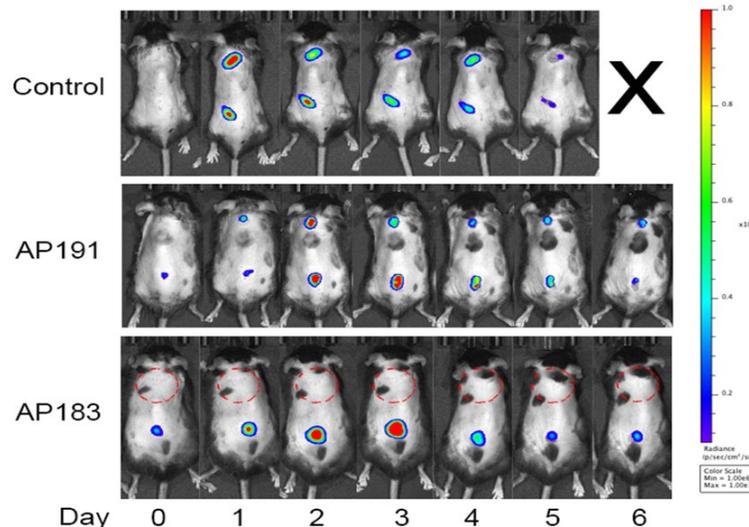
Advantages:

- **DEFEATS ABX RESISTANCE** - Effective against MRSA
- **MICROBIOME-FRIENDLY** - Helps maintain microbial diversity at the wound site
- **FDA-FRIENDLY** - Bacillus is Generally Recognized As Safe (GRAS) = easier approval

Description: More than 350 Bacillus strains were screened for potent antimicrobial activity, safety, and efficacy. A strain of Bacillus amyloliquefaciens (AP183) was found to be effective in all three categories. AP183 inhibited MRSA in vitro and in vivo, reducing viable MRSA counts at wound sites by ~70% and eliminating any signs of skin necrosis 5 days after inoculation. The antimicrobial activity of metabolites produced by AP183 is thought to be short-lived, possibly avoiding unintended long-term effects on beneficial skin microflora. Future studies hope to demonstrate prevention of life-threatening Staph infection in a mouse model and examine the genetic pathways producing the antimicrobial compounds.

Status:

- Mouse studies showed better microbial diversity at wounds and inhibition of MRSA
- Novel Bacillus-made antimicrobial compounds have been identified
- This technology is available for exclusive or non-exclusive licensing



Anti-infective Protection of *B. amyloliquefaciens* Strain AP183.

Mice were injected at two sites; one site with bioluminescent *S. aureus* strain Xen29 alone and a second site with Xen29 and AP183 spores. Mice were monitored for six days. Sites injected with AP183 showed no signs of *S. aureus* growth as detected by bioluminescence (see red dashed circles at shoulders). n=10 mice per treatment.

