

# Gallium: A new antibacterial agent?

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New antibacterial strategies are needed because more and more bacteria are antibiotic resistant and because antibiotics are not effective at eradicating chronic bacterial infections. One approach to developing new antibacterial strategies, taken by researchers from the University of Washington, Seattle, is to limit the amount of iron (Fe), which is critical for bacterial growth, to which bacteria have access.

In the study, which appears online on March 15 in advance of publication in the April print issue of the Journal of Clinical Investigation, Pradeep Singh and colleagues show that Gallium (Ga), which is chemically similar to Fe and can disrupt biological systems by substituting for Fe, inhibits the in vitro growth of *Pseudomonas aeruginosa*; even multidrug resistant strains of *P. aeruginosa* isolated from individuals with cystic fibrosis. Ga also prevented *P. aeruginosa* forming biofilms, the multi-cellular bacterial communities responsible for chronic bacterial infections, and killed both free-living bacteria and bacteria in biofilms.

Furthermore, inhalation of Ga protected mice from both acute and chronic *P. aeruginosa* lung infections. As Ga is already FDA approved for the treatment of hypercalcemia of malignancy, these data suggest that Ga might be a promising new therapeutic for the treatment of infection with *P. aeruginosa*, a major cause of infection in individuals with cystic fibrosis and of infection acquired in hospital.

Source: Journal of Clinical Investigation

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