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Blue light destroys antibiotic-resistant staph infection

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Two common strains of methicillin-resistant *Staphylococcus aureus*, commonly known as MRSA, were virtually eradicated in the laboratory by exposing them to a wavelength of blue light, in a process called photo-irradiation that is described in a paper published online ahead of print in *Photomedicine and Laser Surgery*. The article will appear in the April 2009 issue (Volume 27, Number 2) of the peer-reviewed journal published by Mary Ann Liebert, Inc.

Antibiotic-resistant bacterial infections represent an important and increasing public health threat. At present, fewer than 5% of staphylococcal strains are susceptible to penicillin, while approximately 40%-50% of *Staph aureus* isolated have developed resistance to newer semisynthetic antibiotics such as methicillin as well.

Chukuka S. Enwemeka, Deborah Williams, Sombiri K. Enwemeka, Steve Hollosi, and David Yens from the New York Institute of Technology (Old Westbury, NY) had previously demonstrated that photo-irradiation using 405-nm light destroys MRSA strains grown in culture. In the current study, "Blue 470-nm Light Kills Methicillin-Resistant *Staphylococcus aureus* (MRSA) in Vitro," the authors exposed bacterial colonies of MRSA to various doses of 470-nm light, which emits no UV radiation.

The two MRSA populations studied—the US-300 strain of CA-MRSA and the IS-853 strain of HA-MRSA—represent prominent community-acquired and hospital-acquired strains, respectively.

The authors report that the higher the dose of 470-nm blue light, the more bacteria were killed. High-dose photo-irradiation was able to destroy 90.4% of the US-300 colonies and the IS-853 colonies. The effectiveness of blue light in vitro suggests that it should also be effective in human cases of MRSA infection, and particularly in cutaneous and subcutaneous infections.

"It is inspiring that an inexpensive naturally visible wavelength of light can eradicate two common strains of MRSA. Developing strategies that are capable of destroying MRSA, using mechanisms that would not lead to further antibiotic resistance, is timely and important for us and our patients," says Chukuka S. Enwemeka, PhD, FACSM, Co-Editor-in-Chief of the Journal and first author of the study.

The paper is available free online at www.liebertpub.com/pho.

Source: Mary Ann Liebert