

### Methicillin-resistant *Staphylococcus aureus* (MRSA)

Many bacterial infections possess multi-drug resistance. Arguably the most significant of these bacteria is methicillin-resistant *Staphylococcus aureus*, more commonly known as MRSA or 'the superbug.' This bacterium is resistant to standard antibiotics, including penicillin. According to the *Journal of the American Medical Association*, MRSA is responsible for nearly 20,000 hospital-stay related deaths annually in the United States.[1]

Published data demonstrates that cannabinoids possess strong antibacterial properties. In 2008, investigators at Italy's Universita del Piemonte Orientale and Britain's University of London, School of Pharmacy assessed the germ-fighting properties of five separate cannabinoids against various strains of multidrug-resistant bacteria, including MRSA. They reported that all of the compounds tested showed "potent antibacterial activity" and that cannabinoids were "exceptional" at halting the spread of MRSA.[2]

A second study published that same year reported that non-cannabinoid constituents in the plant also possess antibacterial properties against MRSA and malaria.[3]

Clinical trials regarding the use of cannabinoids for MRSA have been recommended, with some experts stating, "Cannabis sativa ... represents an interesting source of antibacterial agents to address the problem of multidrug resistance in MRSA and other pathogenic bacteria." [4]

#### REFERENCES

[1] Klevens et al. 2007. Invasive methicillin-resistant *Staphylococcus aureus* infections in the United States. *Journal of the American Medical Association* 298: 1763-1771.

[2] Appendino et al. 2008. Antibacterial cannabinoids from cannabis sativa: a structure study. *Journal of Natural Products* 71: 1427-1430.

[3] Radwan et al. 2008. Non-cannabinoid constituents from a high potency cannabis sativa variety. *Phytochemistry* 69: 26727-2633.

[4] Appendino et al. 2008. op. cit.