

Editorial

## Herbal antibiotics: Moving back into the mainstream as an alternative for “Superbugs”

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In general, an antibiotic was a substance produced by one microorganism that selectively inhibited the growth of other microorganisms. The synthetic antibiotics, often chemically related to natural antibiotics, and have been produced to perform similar actions. Antibiotic resistance is generally the result of abuse of antimicrobial agents (1-5). For example, whenever patients failed to take the full course of a prescribed antimicrobial, overuse of antimicrobial agents in agriculture, or when poor quality antimicrobials are used, resistant microbes are likely to emerge and spread. Poor hygiene, excessive crowding, and international travel, serve to accelerate the spread of resistance. Poor infection prevention and control practices and lack of or limited availability of tools and systems for the monitoring and evaluation of antibiotic resistance are other factors that promote antibiotic resistance.

Antibiotic resistance is a global problem now (6). Today, antibiotic-resistant bacteria, known as “superbugs”, are becoming more numerous and more virulent thanks to continuing overuse of antibiotics. Antibiotic resistance was already killing newborns in the developing world and mostly elderly people in the developed world. Based on a medical report from The Lancet Infectious Diseases, studies have found that 39% of 51% bacteria that causes post-surgical infection are now resistant to the standard antibiotics being administered by our health and medical professionals (7, 8). To predict this evolution of bug resistance, it has been estimated that, with the current rate of increase in the United States, that is a 30% increase of antibiotic resistance, can lead to an additional 120,000 infections and 6,000 deaths each year. Based on the World Health Organization (9) Global Report on Surveillance of Antimicrobial Resistance 2014, antimicrobial resistance threatens the effective prevention and treatment of an ever-increasing range of infections caused by bacteria, parasites, viruses and fungi. According to reported or published resistance rates in common bacterial pathogens include *Escherichia coli*, *Klebsiella pneumoniae*, *Staphylococcus aureus*, *Streptococcus pneumoniae*, nontyphoidal *Salmonella*, *Shigella* species, *Neisseria gonorrhoeae*. These seven common bacteria are known to be responsible for acute diseases in various infections in 114 countries in African, American, Eastern Mediterranean, European, South East Asian and Western Pacific regions. Additionally, there are about 440,000 new cases of multidrug-resistance tuberculosis emerging annually. With standard treatments becoming ineffective, and with infections persisting and spreading to others, there are at least 150 deaths, along with reports

from 64 countries in WHO regions indicating extensive drug-resistant tuberculosis. With this information it is imperative that the world urgently undertake actions to develop novel strategies for the prevention and control of antibiotic resistance.

Several years’ of research on herbal medicines have shown that herbal medicines can serve as novel and complementary solutions to overcome drug-resistance bacteria. Herbal antibiotics have used for a long time and were the first strategies to cure various disease of our ancestors. Now, they may be moving back into the mainstream as alternative treatments for bacteria that have become resistant to currently available antibiotics. Our ancestors had solutions for healing, using antimicrobials from nature and it would be good to remind ourselves what these antimicrobials are and possibly think about using them to treat infections. One point that is very important is that many pharmaceutical antibiotics are single isolated chemical components. They are one compound / one chemical, e.g., terramycin is terramycin; amoxicillin is amoxicillin and so forth. This makes them easier for bacteria to adapt to and counteract. In comparison, herbs are much more complicated. In herbs, the whole often seems to be more than the sum of its parts. The various compounds work together, often to produce better than expected outcomes.

Since antibiotic resistance is a genetic trait and it transfers very quickly between one bacterium and another; it is necessary for antibiotics use to be reduced by preventing infections. Also to avoid infections, it is essential to submit oneself to vaccination, to practice better hygiene, and to ensure access to clean water and sanitation. Antibiotics should not be shared with others and neither should left-over prescriptions be used. Antibiotics should be used only when they are prescribed and, where prescribed, the full prescription must be completed even if one feels better. Moreover, the ultimate recommendation is for study to be focused on herbal antibiotics to be developed to combat this antibacterial resistance because antibacterial infection at a point in one’s life time is inescapable.

### Acknowledgements

I would like to thank Professor William N. Setzer,

Received June 1, 2016; Accepted June 30, 2016; Published August 29, 2016

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Department of Chemistry, University of Alabama in Huntsville, Huntsville, AL 35899, USA, for assisting us during the writing of this paper.

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