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Antivirulence agents against bacterial pathogens

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Abstract

Resistance to antibiotics has created a severe public health problem worldwide. Thus, the development of novel antibacterial agents represents an urgent unmet medical need. An alternative approach to antibiotics is the use of antivirulence agents. These compounds do not kill bacteria as antibiotics do but inhibit the production of disease-causing toxins and other virulence factors that impair the ability of the immune system to fight the infection. Prevention of virulence factor secretion would disarm the pathogen of its deadly chemical weapons. There are indications that antivirulence agents can sensitize drug-resistant strains to conventional antibiotics. These preliminary data open the door to combination therapy of an antivirulence drug with "old" beta-lactam antibiotics and other inexpensive antibiotics. This approach has the potential to revolutionize the prevention and treatment of bacterial infections. The discovery of antivirulence agents in the Gram-positive pathogens *Methicillin-Resistant Staphylococcus aureus*(MRSA) and *Streptococcus pyogenes*, as well as in the Gram-negative pathogen *Acinetobacter baumannii* will be discussed. Recently we have also discovered antivirulence agents against the plant pathogens *Pectobacterium carotovorum* and *Xanthomonas campestri*.

Biography

Menachem Shoham completed his Ph.D in the Weizmann Institute of Science (isreal) and he is currently working in the Case Western Reserve University as an associate professor in the department of Molecular Biophysics and Biochemistry and his main research in the laboratory focuses on drug discovery and drug screening to combat infectious diseases. Shoham received many positions and honors and successfully published 57 peer reviewed publications in his research.