Revolution in Medicine Because of Antibiotics: Review of Literature

Because of the discovery and development of antibiotics, medicine was greatly revolutionized. Antibiotics are medicines which kill bacteria. They were and still have been used to treat a wide range of bacteria-related illnesses. Medicine has been revolutionized because of the discovery of penicillin, the derivatives of penicillin [other antibiotics formed from penicillin], and the discovery of completely new antibiotics.

Penicillin was the first antibiotic to be discovered. It was discovered by Alexander Fleming in 1928 accidentally when mold called *Penicillium notatum* killed *Staphylococcus aureus* bacteria (Kardos and Demain 679). After realizing such a discovery, Fleming published a paper on the isolation of *B. influenzae* as a result of penicillin in 1929 (Fleming 192). However, the discovery of this mold revolutionized medicine. It could be used to kill many Gram-positive bacteria (Kardos and Demain 681). As a result, penicillin “saved tens of millions of lives around the world since its debut in World War II” (Kardos and Demain 677). However, penicillin has some limitations. For example, Gram-negative bacteria are insensitive to penicillin (Fleming 192) (Kardos and Demain 681). Illnesses caused by these bacteria can therefore not be cured using penicillin. Though penicillin is non-toxic to humans, people can be allergic to penicillin (Kardos and Demain 678-682). Penicillin, being the first antibiotic, revolutionized medicine with its discovery in 1929.
Because of the limitations of penicillin, derivatives were developed. Such derivatives include ampicillin, an antibiotic taken orally. Ampicillin is also effective against Gram-negative bacteria, unlike penicillin. This allows for the combat of Gram-negative bacteria, opening a wider range of bacteria-related illnesses that can be cured (Acred et al. 356). Another example of a derivative of penicillin that has been made is amoxicillin, which treats patients with *Helicobacter pylori* (Amini and Tavazoie 515). In addition to those, penicillin G, or benzylpenicillin, has become a popular antibiotic (Kardos and Demain 684). Though penicillin was discovered more than eighty years earlier, its impact still shows today. Penicillins alone comprised 16% of the $42 billion market in 2009. β-lactams, products similar to penicillin, comprised 45% of that $42 billion market (Kardos and Demain 680). This shows that not only penicillin, but also its derivatives, revolutionized medicine.

Besides penicillin and its derivatives, other antibiotics exist. Steptomycin was discovered by Selman A. Waksman in the 1940s. This antibiotic treats patients with Gram-negative bacteria-related illnesses as well as Gram-positive bacteria-related illnesses, unlike penicillin (Kardos and Demain 684). Streptomycin is also known for its tuberculocidal effects (Waksman and Smith 253) (Kardos and Demain 684). Tuberculosis was a “major public health problem” before streptomycin was discovered, but its discovery led to a remedy for the illness. Other antibiotics have been discovered such as Neomycin (Kardos and Demain 684). Clarithromycin, for example, treats patients with *Helicobacter pylori* (Amini and Tavazoie 515). Actinomycin can be used as an antitumor drug (Kardos and Demain 684). These discoveries of antibiotics and the significant increase in types of antibiotics led to a bigger diversity in medicine, which meant that there was a bigger diversity of treatments for illnesses.
As a result of the discovery of penicillin, the derivatives of penicillin (other antibiotics formed from penicillin), and the discovery of completely new antibiotics, medicine was revolutionized because many illnesses caused by bacteria were able to be cured. Since the late 1920s, the discovery and development of antibiotics progressed greatly. Before antibiotics, bacterial illnesses were major problems. However, antibiotics changed this completely. Antibiotics left and continue to leave a lasting impact on medicine and life as people today know it.
Works Cited


