

Antibiotics Resistance Past, Present and Future

Shamshoddin Shaikh¹, Deshmukh Sangram², Supriya Shinde³

B.Pharm Students, Dept. of Pharmaceutical Chemistry^{1,3}

HOD and Assistant Professor, Dept. of Pharmaceutical Chemistry²

Latur college of Pharmacy, Hasegaon, Latur Maharashtra, India

Abstract: Antibiotic resistance is a global health concern that has evolved significantly over time. This review provides a comprehensive overview of its past, present and potential future impacts.

Past: Historically, antibiotics revolutionized medicine, saving countless lives by treating bacterial infections. However, the overuse and misuse of antibiotics over the past century has led to the development of resistant bacteria. This resistance arise due to the natural process of genetic mutation and selection.

Current: Currently, antibiotic resistance is a major threat to public health. As resistant bacterial strains have emerged worldwide, some antibiotics are ineffective. This has resulted in longer hospital stays, increased healthcare costs, and increased mortality. Misuse of antibiotics in healthcare settings and agriculture exacerbates the problem.

Future: The future of antibiotic resistance depends on our collective actions. If left unchecked, it could lead to a post-antibiotic era where common infections become deadly. However, efforts to counter the resistance are ongoing. This includes promoting responsible antibiotic use, developing new antibiotics, and advancing alternative treatments such as phage therapy and CRISPR-based approaches.

Multidisciplinary collaboration between the healthcare, agriculture and research sectors is critical to meeting this global challenge.

In conclusion, antibiotic resistance has a complex history and is currently a critical issue. Its future trajectory depends on our ability to implement effective strategies to maintain the effectiveness of antibiotics and find innovative solutions to combat resistant bacteria..

Keywords: Antibiotic resistance.

REFERENCES

- [1]. WHO's "Antibiotic resistance" webpage provides comprehensive information on the global situation, policies, and strategies.
- [2]. CDC offers resources on antibiotic resistance, its impact on public health, and strategies for combating it. CDC Antibiotic Resistance.
- [3]. The NIH provides research and educational materials on antibiotic resistance and antibiotic development.
- [4]. Journals like "The Lancet Infectious Diseases," "Antimicrobial Agents and Chemotherapy," and "Nature Reviews Microbiology" often publish articles on antibiotic resistance and development.
- [5]. Websites of universities and research institutions often feature studies and publications related to antibiotics and resistance.
- [6]. Check the websites of government health agencies in your country for national strategies and guidelines related to antibiotic resistance.
- [7]. "The Antibiotic Era: Reform, Resistance, and the Pursuit of a Rational Therapeutics" by Scott H. Podolsky is a comprehensive historical account of antibiotics.
- [8]. "Antibiotics: Challenges, Mechanisms, Opportunities" edited by Christopher Walsh and Timothy Wenciewicz provides insights into current research and future prospects.
- [9]. "Antibiotic Resistance: Origins, Evolution, Selection, and Spread" by Stuart B. Levy - This book provides a comprehensive overview of antibiotic resistance, its historical context, and the mechanisms behind it.

- [10]. "The Review on Antimicrobial Resistance" (2014) - This influential report, commissioned by the UK government, delves into the global impact of antibiotic resistance, its historical development, and potential future scenarios. It's commonly referred to as the "O'Neill Report."
- [11]. "Antibiotic Resistance: A One Health Approach" by Sara Savic and Thomas P. Van Boeckel - This review article explores antibiotic resistance from a One Health perspective, considering its implications for human health, animal health, and the environment.
- [12]. "The Antibiotic Era: Reform, Resistance, and the Pursuit of a Rational Therapeutics" by Scott H. Podolsky - This historical account traces the development of antibiotics and the challenges posed by antibiotic resistance.
- [13]. "Future challenges in antimicrobial resistance: from societal impact to rational use of antibiotics" by Herman Goossens et al. (2017) - This paper discusses future challenges related to antibiotic resistance and strategies for rational antibiotic use.
- [14]. "The Global Threat of Antimicrobial Resistance: Science for Intervention" by Ramanan Laxminarayan et al. (2013) - This article provides insights into the global scope of antibiotic resistance and the need for scientific interventions.
- [15]. "Antimicrobial Resistance in Bacteria: An Ecological Perspective" by Fernando Baquer et al. (2019) - This review explores the ecological aspects of antibiotic resistance and its potential future evolution.
- [16]. "Antibiotic Resistance: Mechanisms and New Antimicrobial Approaches" by Kateryna Kon and Jean-Marc Ghigo (2019) - This review article discusses the mechanisms of antibiotic resistance and emerging strategies for combating it.
- [17]. "Evolution of Antibiotic Resistance" by Michael Baym et al. (2016) - This study explores how antibiotic resistance evolves in bacteria and its implications for the future of antibiotic use.
- [18]. "The Economic Burden of Antibiotic Resistance: How Much Do We Really Know?" by Aidan Hollis (2014) - This paper examines the economic impact of antibiotic resistance and the challenges in estimating its true cost.
- [19]. "Antibiotic Resistance in Foodborne Pathogens: Evidence of the One Health Framework in Action" by Rachel E. Bennett et al. (2017) - This research paper focuses on antibiotic resistance in foodborne pathogens and the One Health approach to addressing this issue.
- [20]. "Antibiotic Resistance: The Need for a Global Strategy" by Hajo Grundmann et al. (2011) - This article discusses the global nature of antibiotic resistance and the need for international cooperation in combatting it.
- [21]. "Antibiotic Resistance: A Primer and Call to Action" by Helen W. Boucher et al. (2017) - This perspective piece provides an overview of antibiotic resistance and emphasizes the importance of action to address the crisis.
- [22]. "Antibiotic Resistance: An Ecological Perspective on an Old Problem" by Tom J. J. Schmidt et al. (2017) - This review explores antibiotic resistance from an ecological standpoint, considering its impact on ecosystems.
- [23]. "The Role of the Environment in the Transmission of Antimicrobial Resistance to Humans: A Review" by Céline Colinon et al. (2019) - This paper examines the role of the environment in the transmission of antibiotic resistance to humans.