

**Keywords:** Antibiotic resistance; Antibiotic; Bacteria resistance; Resistance mechanism; Genetic mutation; Horizontal gene transfer; Evolution.

### Introduction

The emergence and spread of antibiotic resistance in bacteria has become a major public health concern. Antibiotic resistance is the ability of bacteria to survive and grow in the presence of an antibiotic. This is a natural phenomenon that has been occurring since the first antibiotics were discovered. However, the widespread use of antibiotics has led to a rapid increase in the number of antibiotic-resistant bacteria. This is due to the fact that antibiotics are often used inappropriately, such as for viral infections or for a short duration. This has led to the selection of resistant strains. Antibiotic resistance is a major cause of morbidity and mortality worldwide. It is a global health threat that requires urgent action. This review discusses the mechanisms of antibiotic resistance, the impact of antibiotic resistance on public health, and the strategies for preventing and controlling antibiotic resistance.

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