

Tackling the Antibiotic Resistance: The “Gut” Feeling

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Abstract Antibiotic resistance is a threat to human health worldwide. The ever-increasing multidrug-resistant (MDR) strains of many bacterial pathogens are paralyzing our efforts to treat many deadly infections. An important measure to deal with the menace is to better understand the process and manage the reservoirs or risk areas. Over the recent past, the importance of gut bacteria in various aspects of human health and physiology has been highlighted. Also, studies are now being carried out to better understand its role in antimicrobial resistance and grave consequences of antibiotic exposure on gut microbiota. This chapter highlights the importance of gut microbiota in better understanding of antibiotic resistance and summarizes the burden imposed by antibiotic use in the healthcare sector. Due to close contact of pathogens with dense human microbiota during the disease progression, gene transfer events might occur frequently. In this context, our microbiome warrants special attention since it can possibly act as one of the most accessible reservoir of antibiotic resistance genes. It seems pertinent to evaluate antimicrobial therapies in the context of this microbial framework, as many life-threatening infections can arise due to antibiotic-associated alterations in the gut microbiota.

1 Introduction

In 1928, when Alexander Fleming discovered penicillin, the first natural chemical compound with antibiotic properties (Fleming 1980), the world rejoiced and called it a “wonder drug.” Since then, the discovery of antibiotics has probably been one of

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