

Chapter 6

ANTIMICROBIAL RESISTANCE PROBLEM: TARGET AND RESISTANCE MECHANISMS

İlknur DAĞ¹

◆ Introduction

One of the most important problems that threaten public health today is the antibiotic resistance increase in important microbial pathogens. Especially microorganisms with multiple drug resistance have started to pose a danger in the community as well as in hospital settings. With the mutational adaptations developed against antibiotics, microorganisms become stronger and increase their chances of survival. In fact, antimicrobial resistance of the microorganism is a natural phenomenon, but intense antimicrobial exposure in human and animal health services, agricultural practices and the environment has a guiding effect on antimicrobial resistance. We need more information about the biochemical or genetic basis of resistance mechanisms in microorganisms. Thus, the development of new and alternative treatment studies will be more possible and the use of different approaches for the antimicrobial resistance problem can be paved. In this review, it is aimed to make detailed explanations about antimicrobial resistance problem and mechanisms causing resistance.

The age of antibiotics started with miracle drug penicillin and many antibiotics have been developed since then. However, due to reasons such as persistent use of antibiotics, self-treatment and exposure to hospital infections, microorganisms that show drug resistance are frequently reported, and strains with multiple drug resistance have been a major problem in recent years⁽¹⁾. Antimicrobial agents show sidal or static effects on microorganisms using different targets. Microorganisms are also trying to overcome antimicrobial agents by using different types of mechanisms. A summary diagram of these goals and mechanisms is presented in Figure 1.

In general, the term antimicrobial resistance (AMR) can be defined as the ability of microorganisms to survive in the presence of various antimicrobial agents.

¹ Prof. Dr., Eskişehir Osmangazi University (ESOGU), Central Research Laboratory Application and Research Center (ARUM); Vocational Health Services High School, ildag@ogu.edu.tr

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