

When the antibiotics quit working

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Running head: WHEN ANTIBIOTICS QUIT WORKING When Antibiotics Quit Working al Affiliation WHEN ANTIBIOTICS QUIT WORKING Abstract The antibiotic resistance and factors provoking this phenomena were studied in the context of the given visual research task. In the course of time, the population (but not a single individual) can acquire resistance to some chemicals, such as antibiotics and pesticides. The emergence of drug resistance within the populations of organisms is a logical consequence of the theory of evolution. Thus, antibiotic is a substance of microbial, animal or plant origin, which can suppress the growth of microorganisms, or cause their death. Antibiotics are prescribed to prevent and treat inflammation caused by bacterial microflora. Nowadays the excessive and uncontrolled use of antibiotics led to the emergence of new bacterial strains resistant to antibiotics. WHO calls to action the entire society, health workers, prescribers of medicines, policy makers to ensure a responsible attitude towards the use of antibiotics. Key words: antibiotics, antibiotic resistance.

WHEN ANTIBIOTICS QUIT WORKING In the course of time, the population (but not a single individual) can acquire resistance to some chemicals, such as antibiotics and pesticides. All we heard frightening stories about germs that are insensitive to antibiotics. Indeed, lots of people in the course of the treatment process had to replace one antibiotic with another one, due to the fact that the first antibiotic was ineffective. The emergence of drug resistance within the populations of organisms is not a weird revenge of Mother Nature to mankind, but a logical consequence of the theory of evolution. The existence of differences between population members is one of the fundamental principles of evolution. Today we know that these differences are embedded in the genes. Moreover, the life of any organism (a <https://assignbuster.com/when-the-antibiotics-quit-working/>

bacterium or human) is a series of chemical transformations of molecules. The effect of antibiotics implies its serving as an inhibitor, i. e. any antibiotic inhibits or suppresses any chemical reaction, which is vitally important to the microbe. For example, penicillin blocks the molecules involved in the construction of new cell walls of bacteria. But a small number of bacteria can have molecule of such a form that is less sensitive to the negative effects of some antibiotics (e. g. penicillin). After many generations, natural selection will lead to a predominance of bacteria with genome containing molecule, which is less sensitive to the drug. In the end, the population of microbes completely immune to this antibiotic emerges (Cirz et al., 2005). Thus, antibiotic is a substance of microbial, animal or plant origin, which can suppress the growth of microorganisms, or cause their death. Antibiotics are prescribed to prevent and treat inflammation caused by bacterial microflora. But physicians prescribe antibiotics for common viral infections to relatively healthy patients to prevent possible secondary bacterial infections, despite the fact that reliable data of clinical trials demonstrate the futility of such prevention (The Journal of Antibiotics 2010). In developing countries, pharmacists are willing WHEN ANTIBIOTICS QUIT WORKING to released antibiotics without prescription, because their incomes depend on sales and not on fees or salaries. Such widespread use should be related to the management. Such unregulated access to antibiotics will have dire consequences, including the continuous emergence of “ super bacteria” and other incurable infections. The emergence of antibiotic-resistant strains of bacteria is a serious problem. Such phenomenon reduces the therapeutic efficacy of antibiotics and also increases the likelihood of illness of hospitalized patients (Poole, 2004). In-hospital antibiotic-resistant bacteria

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are transmitted from one patient to another, stand to the environment and contaminate air, dressings and health products. Staphylococci infections resistant to penicillin, streptomycin and other antibiotics are wide-spread. Bacteria that cause both ordinary and life-threatening infections are becoming increasingly resistant to antibiotics. This occurs because of the massive, excessive and inappropriate use of antibiotics by humans and animals. This problem needs urgent solution that is why resistance of pathogens to antimicrobial agents became a central theme of World Health Day 2011. Now as a result of heavy drug-resistant nosocomial bacterial infections, in the countries of European Union about 25 thousand people die annually (URL who. int/mediacentre). Without new and effective antibiotics society can go back to “ pre-antibiotic” era, where the usual pulmonary infection might cause the death of a child or when the doctors could not resist meningitis. Another example of this new health threat is tuberculosis with multidrug resistance. WHO calls to action the entire society, health workers, prescribers of medicines, policy makers, pharmaceutical industry, as well as producers of meat and dairy products to ensure a responsible attitude towards the use of antibiotics. WHEN ANTIBIOTICS QUIT WORKING

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