OPEN ACCESS Freely available online

Journal of Drug Metabolism & Toxicology

Commentary

A Brief Note on Drug Resistance

Esther Abam*

Department of Chemical Sciences, Bells University of Technology, Ota, Nigeria

DESCRIPTION

The ineffectiveness of a treatment, such as an antibiotic or antineoplastic, treating a disease or condition is known as drug resistance. The phrase is used in the context of pathogen or cancer resistance that has "acquired". Antimicrobial and anticancer resistance provides a barrier to clinical care and stimulates research.

Multidrug-resistant organisms are those that are resistant to multiple drugs. Antibiotic resistance arises in part as a result of medications that target just specific bacterial molecules. Any alteration in these molecules will interfere with or nullify the drug's destructive impact, resulting in antibiotic resistance. Drug, toxin, and chemical resistance are result of evolution and a reaction to the forces that each living thing faces. Individual species differ in their susceptibility to the medicine, and those with higher fitness may be able to withstand treatment. As a result, drug-resistant features are passed down to following generations, resulting in a population that is increasingly drug-resistant. Resistance to the medicine will certainly develop unless the drug employed prevents sexual reproduction, cell division, or horizontal gene transfer in the whole target population.

This is seen in malignant tumours, as certain cells gain resistance to chemotherapeutic medicines. Chemotherapy causes significant levels of the protein WNT16B to be produced by fibroblasts surrounding tumours. This protein encourages the proliferation of drug-resistant cancer cells.

MicroRNAs have also been demonstrated to alter cancer cell acquired drug resistance, which might be employed for therapeutic purposes. Horizontal gene transfer is a quick mechanism of transferring resistance among single-celled organisms in which genes are directly exchanged, especially in the biofilm stage. Fungi employ a similar asexual strategy known as "parasexuality."

Microorganisms such as bacteria and viruses, endo and ectoparasites, plants, fungi, arthropods, mammals, birds, reptiles, fish, and amphibians are examples of drug-resistant strains.

Drug-resistant strains of bacteria can emerge in the home from seemingly harmless activities like bleach, tooth brushing and mouth washing, antibiotics, disinfectants and detergents, shampoos and soaps, particularly antibacterial soaps, hand-washing, surface sprays, application of deodorants, sunblocks, and any cosmetic or health-care product, insecticides, and dips. In addition to hurting beneficial creatures, the chemicals in these preparations may target organisms that have the potential to develop resistance, either purposefully or accidentally.

MDR1 (p-glycoprotein) is a major medicine transporter at the cellular level, and the ABCB1 gene encodes it in humans. Drug resistance grows when MDR1 is overexpressed. As a result, it is possible to track ABCB1 levels. Secondary therapies, like as metformin, have been utilized in combination with main medication treatment in individuals with high levels of ABCB1 expression and have shown to be effective.

Drugs developed to disrupt the processes of bacterial antibiotic resistance are used to combat antibiotic resistance, which is a significant problem currently. Bacterial resistance to beta-lactam antibiotics can be overcome by employing antibiotics like nafcillin, which are not destroyed by beta-lactamases (the group of enzymes responsible for breaking down beta-lactams).

Beta-lactam bacterial resistance can also be combated by combining beta-lactam antibiotics with beta-lactamase inhibitors like clavulanic acid, which allows the medicines to operate without being destroyed by the bacteria. Researchers have recently realized the need for novel antibiotics that block bacterial efflux pumps, which produce resistance to a variety of antibiotics such as beta-lactams, quinolones, chloramphenicol, and trimethoprim by moving antibiotic molecules out of the bacterial cell. When a combination of several antibiotic classes is used synergistically, it means that they function together to successfully combat bacteria that are resistant to one or more of the antibiotics. Phage treatment, in which a particular bacteriophage (virus that destroys bacteria) is utilized, can also be used to destroy resistant germs.

Correspondence to: Dr. Esther Abam, Department of Chemical Sciences, Bells University of Technology, Ota, Nigeria, Tel: 2348036743380; E-mail: eoabam@bellsuniversity.edu.ng

Received: 01-Mar-2022, Manuscript No JDMT-22-19446; **Editor assigned:** 03-Mar-2022, PreQC No JDMT-22-19446 (PQ); **Reviewed:** 17-Mar-2022, QC No. JDMT-22-19446; **Revised:** 24-Mar-2022, Manuscript No. JDMT-22-19446 (R); **Published:** 31-Mar-2022; DOI: 10.35248/2157-7609.22.13.265

Citation: Abam E (2021) A Brief Note on Drug Resistance. J Drug Metab Toxicol. 13:265.