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Commentary

Brief note on antimicrobial resistance

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INTRODUCTION

To fight the increasing health hazard of antimicrobial resistance (AMR), worldwide and collective action is required. In collaboration with the World Animal Health Organization and the United Nations Food and Agriculture Organization, the WHO Global Action Plan on AMR strives to achieve this. However, in poorer regions of the globe, resources for executing the solutions indicated in national action plans may be few, and more basic concerns may be more important. To address AMR, we must make it possible for Low- and Middle-Income Countries (LMICs) to adopt sustainable sanitation, secure nutrition, and access to good health care, avoiding infections and limiting resistance dissemination.

All governments, on the other hand, should limit antibiotic usage to healthy animals, help to halt antibiotic contamination in the environment from the pharmaceutical sector, and minimise needless antibiotic use in humans. Only by worldwide coordination and collaboration will we be able to defeat AMR. The World Health Organization's Global Action Plan serves as a framework for national action. To change the tide, we'll need stronger procedures and greater investments, and we'll need to start with the basics.

The use of CeO_2 for detection of drug resistance

Antimicrobial resistance is on the increase, and it's getting out of hand. Antimicrobial resistance must be detected early in order to develop improved treatment techniques. Due to their capacity to reside in a mixed-valence state and operate as either oxidising or reducing agents, CeO_2 nanoparticles may play a key role in detecting drug resistance. The use of CeO_2 NPs (Cerium oxide nanoparticles) for glucose detection was beneficial for detecting an inhibitory vs. no inhibitory concentration of the antibiotic ampicillin. Surprisingly, only a spectrophotometer is required for detection in this method. Furthermore, the procedure is straightforward and does not necessitate the use of any chemicals or an acidic pH.

Antimicrobial resistance: Its causes and ways it spreads

Antimicrobial resistance has become a catastrophic problem for public health in the recent years. Widespread uses of antibiotics in medicine, veterinary, agriculture and poultry have contributed a lot toward the development of bacterial resistance. The various causes beyond the development of resistance to the antibiotics are briefly summarized below.

Genetic modification of organisms

Antimicrobial resistance develops throughout time, mainly as a result of genetic alterations in bacteria. There are many germs in our bodies, some of which are considered beneficial bacteria (which protect the body from diseases), others which are considered bad bacteria (which cause illness through infections), and only a few which are medication resistant bacteria. Antibiotics normally kill both harmful and healthy bacteria, but they have little effect on drug-resistant bacteria, which are then permitted to take control and flourish. Some drug-resistant bacteria pass their resistance gene on to other bacteria, making them resistant and exacerbating the issue. Antibacterial resistance develops spontaneously as a result of genetic change.

Over prescription of antibiotics

Antibiotics have been abused and/or overused in people and animals, hastening the development of antimicrobial resistance. Antibiotics are sometimes prescribed for viral diseases such as the common cold and flu, which do not require antibiotics at all. Antibiotics are given to animals with the purpose of promoting growth and/or preventing sickness in otherwise healthy animals. Antibiotics are also utilised in agriculture and for the preservation of chicken products in an unjustified manner. AMR is caused by antibiotic misuse and/or overuse.

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