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Perspective

Efficacy and Mechanism of an Action of Antiprotozoal Drugs for Protozoal Infections

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DESCRIPTION

Antiprotozoal drugs are a class of drugs used to treat infections caused by protozoa, single-celled organisms belonging to the parasitic species. Protozoa infections occur worldwide and are a major cause of morbidity and mortality in some regions such as Africa and Southeast Asia. Common types of protozoan infections and associated conditions are malaria, giardiasis, and trichomoniasis. Antiprotozoal agents may destroy protozoa or inhibit their growth or reproductive capacity. Antiprotozoal drugs include the antimalarial drugs Aralen (chloroquine), dalaprim (pyrimethamine), lalium (mefloquine), and plaquenil (hydroxychloroquine). Flagyl (metronidazole) is effective against Entamoeba histolytica and Trichomonas vaginalis. Medically important protozoa include Plasmodium (the cause of malaria), Entamoeba histolytica (cause of amebiasis, amebic dysentery) and Trichomonas vaginalis (cause of vaginal infections), Pneumocystis carinii (a common cause of pneumonia in immunocompromised patients). Antiprotozoal is a prescription drug that comes in different dosage forms, such as tablets and capsules, and usually takes three times a day with food. They are also available as powders for making solutions for injection. Antiprotozoal agents destroy protozoa or inhibit the growth and reproduction of protozoa. They damage the protozoan DNA and limit the spread of infection. They inhibit a fundamental pathway of protozoan energy metabolism (inhibition of parasite dehydrogenase activity), thereby rendering protozoan growth and reproduction.

Mechanisms of action of antiprotozoal and anthelmintic drugs have been reviewed for drugs that interfere with metabolic processes, drugs that interfere with reproductive and larval physiology, and drugs that interfere with parasite neuromuscular physiology. Any antiprotozoal drug that kills or inhibits the growth of organisms is well known as protozoa. Protozoa cause various diseases such as malaria and Chagas disease. Although typically microscopic, protozoa resemble plants and animals in that they are eukaryotes and therefore have well-defined nuclei. This distinguishes them from prokaryotes such as bacteria. As a result, many antibiotics that are effective in suppressing bacteria are not effective against protozoa.

The following drug interactions have been implicated in the use of antiprotozoal drugs: discontinue pyrimethamine if signs of folic acid deficiency (diarrhea, fatigue, weight loss, and anemia) develop. Impairs the fertility of cells and subsequently leads to cell death. Antiprotozoal may interact with other drugs too. Tell the doctor about any medicines that are taken while using antiprotozoal, including over-the-counter medicines or non-prescribed medicine. Doctors can then determine whether it is safe to take antiprotozoal drugs. Antiprotozoal drugs are used in the following diseases: African trypanosomiasis (sleeping sickness), Chagas disease (a vector-borne disease that affects animals and humans caused by a parasite called Trypanosoma cruzi, commonly found in the United States known as trypanosomiasis).

Commonly used oral antiprotozoal drugs can be broadly divided into two main groups: antimalarial drugs and other antiprotozoal drugs. In addition to their use as anti-protozoans, some drugs such as metronidazole and doxycycline are also used to treat bacterial infections. The effects of antiprotozoal drugs against infections are complex and not fully understood. Some of them can interfere with or damage the replication of protozoan DNA to limit the spread of infection. Most oral antiprotozoal drugs require a prescription and are available in various dosage forms such as tablets and capsules. Use only under the strict supervision of a medical professional. Follow the recommended treatment cycle and take the correct dose as directed by healthcare professionals. Avoiding mosquito bites is the first line of defense. It is recommended that sleep in air-conditioned or screened rooms, use insecticide sprays indoors, and use mosquito nets if while sleeping area is not air-conditioned or screened. Wearing long sleeves and long pants and applying an insect repellent containing DEET to exposed skin. Oral antiprotozoal agents should be stored in a cool, dry place. Do not store medicines in the refrigerator unless stated on the label. In addition, to prevent accidental ingestion of medicines, store them properly out of reach of children.

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