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Editorial

Editorial Note for Antivirals: New Drug Delivery Systems

Ramya Derai *

Department of Frontier Veterinary Medicine, University of Pittsburgh, Pennsylvania, USA

SUMMARY

Antiviral drugs are a class of medication used for treating viral infections. Most antivirals target specific viruses, while a broad-spectrum antiviral is effective against a wide range of viruses. Unlike most antibiotics, antiviral drugs do not destroy their target pathogen; instead they inhibit its development [1].

Antiviral drugs are one class of antimicrobials, a larger group which also includes antibiotic (also termed antibacterial), antifungal and antiparasitic drugs, or antiviral drugs based on monoclonal antibodies. Most antivirals are considered relatively harmless to the host, and therefore can be used to treat infections. They should be distinguished from viricides, which are not medication but deactivate or destroy virus particles, either inside or outside the body. Natural viricides are produced by some plants such as eucalyptus and Australian tea trees [2].

Novel drug carriers such as liposomes, dendrimer, solid dispersion, microparticles, and nanoparticles are employed to improve therapeutic outcomes. The recent advancements made in the field of antiviral therapy have been discussed in this article.

Antiviral Drug Design

The general idea behind modern antiviral drug design is to identify viral proteins, or parts of proteins, that can be disabled. These "targets" should generally be as unlike any proteins or parts of proteins in humans as possible, to reduce the likelihood of side effects. The targets should also be common across many strains of a virus, or even among different species of virus in the same family, so a single drug will have broad effectiveness. For example, a researcher might target a critical enzyme synthesized by the virus, but not by the patient, that is common across strains, and see what can be done to interfere with its operation.Once targets are identified, candidate drugs can be selected, either from drugs already known to have appropriate effects or by actually designing the candidate at the molecular level with a computer-aided design program.

The target proteins can be manufactured in the lab for testing with candidate treatments by inserting the gene that synthesizes the target protein into bacteria or other kinds of cells. The cells are then cultured for mass production of the protein, which can then be exposed to various treatment candidates and evaluated with "rapid screening" technologies [3].

Antiviral drug resistance

Antiviral resistance can be defined by a decreased susceptibility to a drug caused by changes in viral genotypes. In cases of antiviral resistance, drugs have either diminished or no effectiveness against their target virus [4]. The issue inevitably remains a major obstacle to antiviral therapy as it has developed to almost all specific and effective antimicrobials, including antiviral agents [5].

CONCLUSION

The Conclusion is guanine derivative antiviral drug acyclovir (ACV) is one of the oldest molecules laying successful market until date, being commercially available in various dosage forms for oral, topical and parenteral administrations. Clinical application of this drug is superior to new antiviral agents due to its potential values such as suppression of recurrence, safety profile, minimal drug interactions, and being inexpensive. ACV is slightly water soluble, less permeable and poorly bioavailable, yet more potential antiviral molecule, the physicochemical modifications and novel dosage form approaches resulted with more than 100 research works within a decade. The survey of literature showed enormous reports on ACV formulation development, which includes modified tablets, particulate drug delivery, vesicular drug delivery, polymeric nanoparticles, bioadhesive systems, floating dosage forms, in situ gelling systems, transdermal delivery, implantable systems, emulsified dosage forms, polymeric films/patches, etc. As the drug could be administered via multiple routes for effective site targeted action at various doses, and attracted the attention of many researches, the review of the current approaches for the delivery of ACV could be more beneficial for the new scientists. This paper is a review of recent researches highlighting the development of newer techniques and novel dosage forms of ACV for better therapeutic efficacy, which were aimed at enhancing its solubility, permeability and bioavailability

Correspondence to: Ramya Derai, Department of Frontier Veterinary Medicine, University of Pittsburgh, Pennsylvania, USA, E-mail: Ramyaderaigk@gmail.com

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