Brincidofovir

National Cancer Institute

Source

National Cancer Institute. Brincidofovir. NCI Thesaurus. Code C90587.

An alkoxyalkyl ester prodrug containing the synthetic, acyclic nucleoside monophosphate analog cidofovir linked, through its phosphonate group, to a lipid, 3-hexadecyloxy-1-propanol, with antiviral activity against double-stranded DNA viruses. Upon oral administration, brincidofovir crosses the intestinal wall and penetrates target viral-infected cells before being cleaved to the free antiviral agent cidofovir. In turn, cidofovir is phosphorylated by pyruvate kinases to its active metabolite cidofovir diphosphate. Cidofovir diphosphate, bearing structural similarity to nucleotides, competes with deoxycytosine-5-triphosphate (dCTP) for viral DNA polymerase and gets incorporated into the growing viral DNA strands. As a result, it prevents further DNA polymerization and disrupts DNA replication of viruses. Compared to cidofovir, which is given intravenously, hexadecyloxypropyl-cidofovir shows better oral bioavailability, less toxicity and enhanced cellular penetration.