

Protease binds protease inhibitors

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Introduction

Reactome is open-source, open access, manually curated and peer-reviewed pathway database. Pathway annotations are authored by expert biologists, in collaboration with Reactome editorial staff and cross-referenced to many bioinformatics databases. A system of evidence tracking ensures that all assertions are backed up by the primary literature. Reactome is used by clinicians, geneticists, genomics researchers, and molecular biologists to interpret the results of high-throughput experimental studies, by bioinformaticians seeking to develop novel algorithms for mining knowledge from genomic studies, and by systems biologists building predictive models of normal and disease variant pathways.

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Stable identifier: R-HSA-9697043

Type: binding

Compartments: extracellular region

Diseases: Human immunodeficiency virus infectious disease



Antiretroviral (ARV) therapy, comprising a backbone of two nucleos(t)ide reverse transcriptase inhibitors (NRTIs) plus another ARV, has helped extend life expectancy in people living with HIV (Orkin et al. 2018).

Lopinavir is an antiretroviral protease inhibitor used in combination with other antiretrovirals in the treatment of HIV-1 infection. Like many other protease inhibitors, lopinavir is a peptidomimetic molecule; it contains a hydroxyethylene scaffold that mimics the peptide linkage typically targeted by the HIV-1 protease enzyme but which itself cannot be cleaved, thus preventing the acivity of the HIV-1 protease (Reddy et al. 2007). Another HIV protease inhibitor, darunavir, prevents HIV replication through binding to the enzyme, stopping the dimerization and the catalytic activity of HIV-1 protease (De Meyer et al. 2005). In particular, it inhibits the cleavage of HIV encoded Gag-Pol proteins in cells that have been infected with the virus, halting the formation of mature virus particles, which spread the infection (Davis et al. 2012).

Lopinavir in combination with other drugs is currently being investigated for patients with COVID-19 (many clinical trials, example registration nos. ChiCTR2000029603, ChiCTR2000029539, NCT04255017, NCT04261270) (Harrison 2020, Cao et al. 2020, Deng et al. 2020, Martinez 2020).

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Editions

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