Potent Dimerization Inhibitors for HIV-1 Protease

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- Medical/Health
- Pharmaceuticals

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Advances in the treatment of HIV/AIDS with HIV-1 protease inhibitors in combination with reverse transcriptase inhibitors, known as highly active antiretroviral therapy (HAART), has resulted in improved life expectancy and significantly reduced HIV/AIDS-related mortality in the developed world. Unfortunately, HAART suffers from adverse drug side effects, poor oral bioavailability, and drug interactions. Also, drug-resistant HIV-1 variants have begun to emerge. Development of antiretroviral therapy with broad-spectrum activity and minimal side effects is needed for current and future HIV/AIDS treatment.

Purdue University researchers have created Darunavir, brand name Prezista, a drug used to treat HIV infection. Prezista was developed by the pharmaceutical company Tibotec and is an OARAC recommended treatment option for treatment-naive and treatment-experienced adults and adolescents. It is also used in patients with drug-resistant HIV.

The researchers have also developed a new generation of protease inhibitors that are exceedingly potent and maintain potency against multidrug-resistant HIV-1 variants. Dr. Ghosh's laboratory has designed, synthesized, and evaluated several different series of compounds. These novel protease inhibitors show potent enzyme inhibitory, antiviral activity, and exceptional broad spectrum activity against highly cross-resistant mutant.

Advantages:
- Decreased adverse side effects
- Effective against multidrug-resistant HIV-1 variants
- Improved bioavailability
- Superior pharmacokinetic properties

Potential Applications:
- Medical/Healthcare
- Pharmaceuticals
- Drug Development
- HIV/AIDS Treatment

People:
- Ghosh, Arun K (Project leader)
- Koh, Yasuhiro
- Mitsuya, Hiroaki

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Contact OTC: