



**SNS COLLEGE OF PHARMACY AND HEALTH SCIENCES**

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## **ANTI VIRAL DRUGS**

- Viruses are very tiny germs. They are made of genetic material inside of a protein coating.
- Viruses cause familiar infectious diseases such as the common cold, flu and warts.
- They also cause severe illnesses such as HIV/AIDS, smallpox, and Ebola.
- They, normal invade livingcells and use those cells to multiply and produce other viruses like themselves.
- Antibiotics do not work for viral infections. There are antiviral medicines to treat some viral infections. Vaccines can help prevent you from getting many viral diseases.

# Classification of antiviral Agents

## 1. Anti-Herpes virus

Idoxuridine, Acyclovir, Valaciclovir, Famciclovir, Ganciclovir, Foscarnet

## 2. Anti-Retrovirus

### (a) *Nucleoside reverse transcriptase inhibitors (NRTIs):*

Zidovudine (AZT), Didanosine, Zalcitabine, Stavudine, Lamivudine, Abacavir, Tenofovir

### (b) *Nonnucleoside reverse transcriptase inhibitors (NNRTIs):*

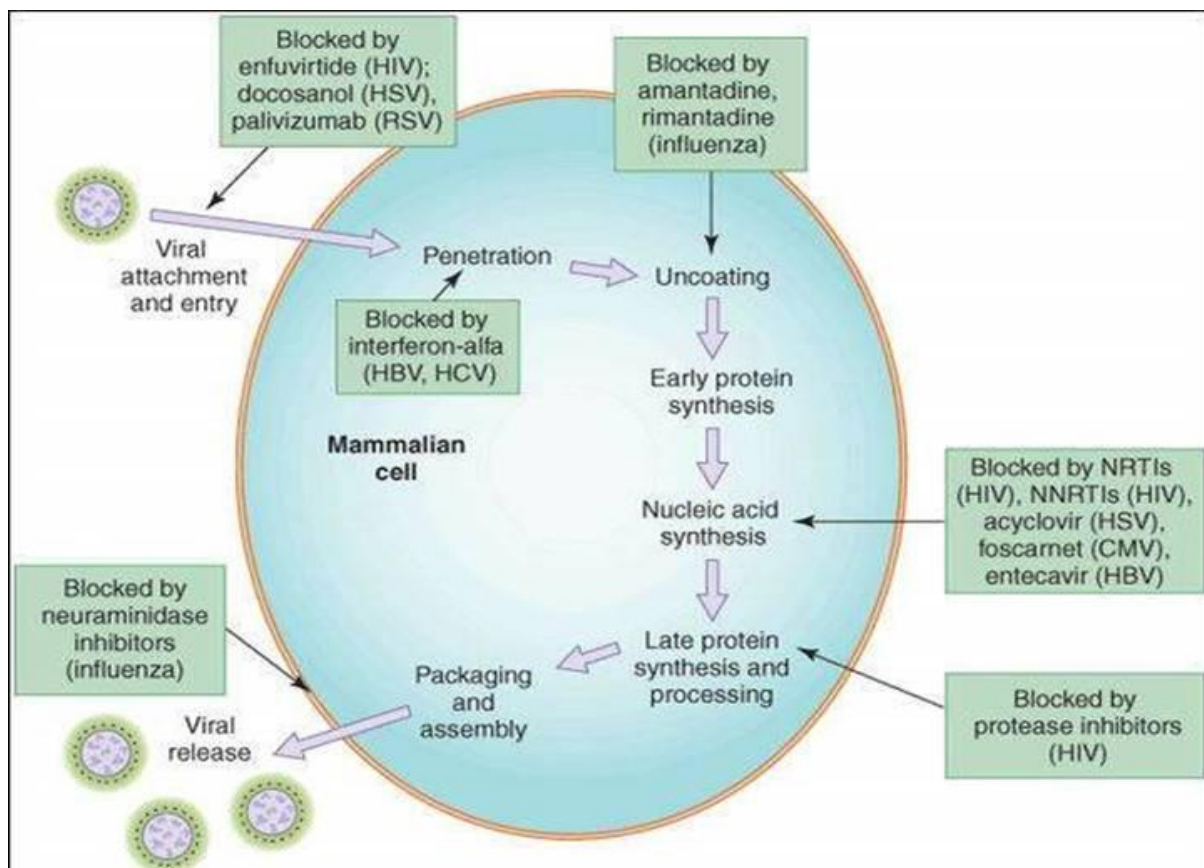
Nevirapine, Efavirenz, Delavirdine

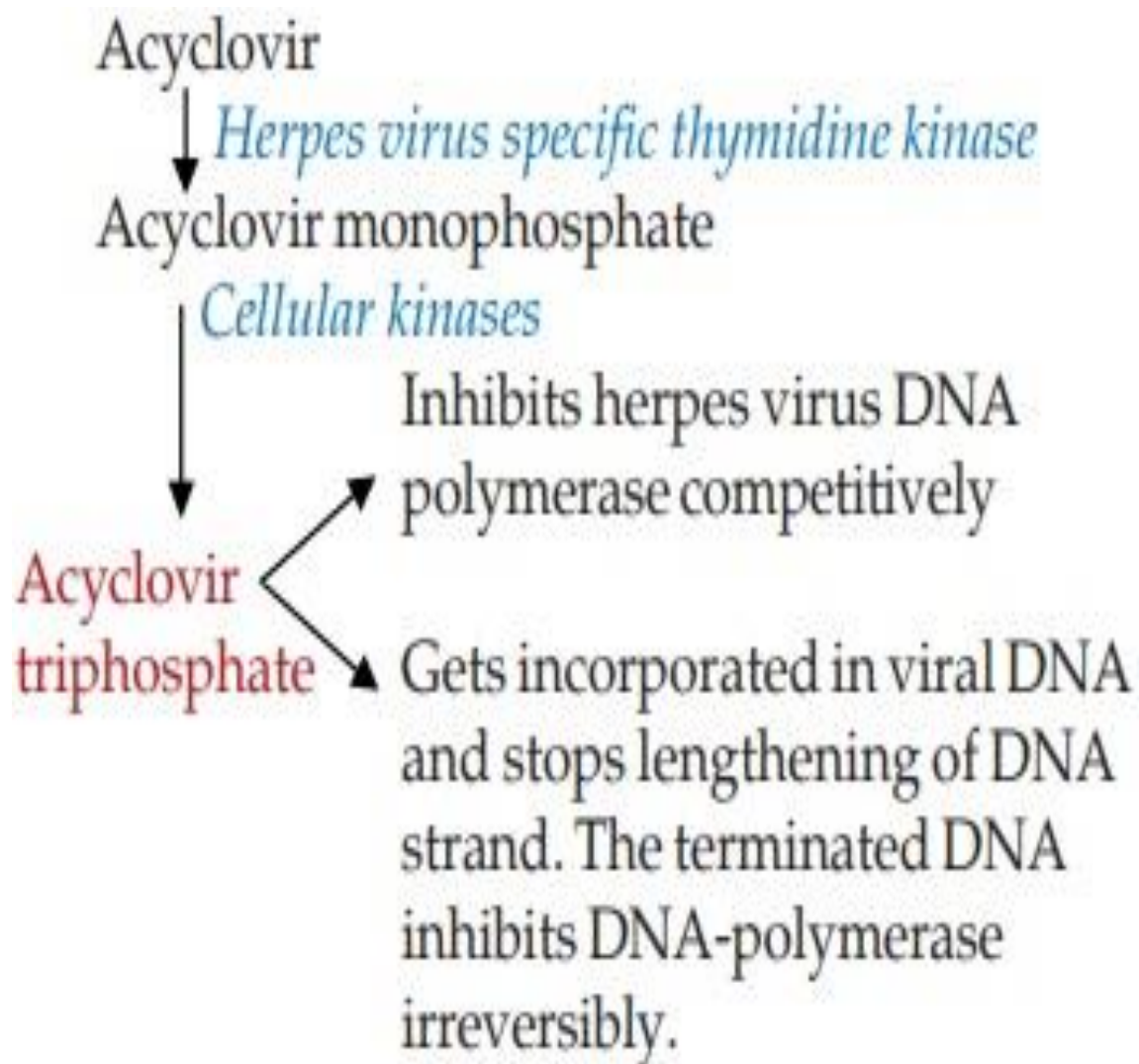
### (c) *Protease inhibitors:* Ritonavir, Indinavir, Nelfinavir, Saquinavir, Amprenavir, Lopinavir

## 3. Anti-Influenza virus- Amantadine, Rimantadine, Oseltamivir, Zanamivir

## 4. Nonselective Antiviral Drugs

Ribavirin, Lamivudine, Adefovir dipivoxil, Interferon  $\alpha$





# Acyclovir

## ❖ Uses:

- Genital Herpes simplex  
Primary disease  
Recurrent disease
- Mucocutaneous H. simplex
- H. simplex encephalitis  
(type-1 virus)
- H. simplex keratitis
- Herpes zoster
- Chickenpox

## ❖ Adverse effects:

- **Topical:** stinging and burning sensation after each application
- **Oral:** Headache, nausea, malaise and some CNS effects
- **Intravenous:** Rashes, sweating, emesis, and fall in BP (in few)
- Dose dependent decrease in GFR (in renal failure)

## 2. Anti-influenza virus

### Amantadine

- Its antiviral activity is strain specific = inhibits replication of influenza A virus but not influenza B

#### ❖ Mechanism of action:

- It acts at uncoating as well as viral assembly in viral replication
- Blocks the viral membrane matrix protein, M2, which functions as a channel for hydrogen ion
- This channel is required for the fusion of the viral membrane with the cell membrane that ultimately forms the endosome (during internalization of the virus by endocytosis)

## **Amantadine**

- Less efficacious than L-dopa
- Its benefits last only for short period (few weeks) and only used for L-dopa resistance.

## **Adverse effects**

- Nausea, anxiety, insomnia, confusion, hallucinations (dopamine like side effects).
- Dry mouth, urinary retention (anticholinergic effects).
- Restlessness and hallucinations (NMDA antagonist).



# Amantadine

## ❖ Uses:

- Prophylaxis of influenza A2 during an epidemic or seasonal influenza (~ 2 months)
- Treatment of influenzal (A2) illness
  - Reduction in fever, congestion, cough and quicker recovery
  - Parkinsonism

## ❖ Contraindications:

- Epilepsy and other CNS disease; gastric ulcer, pregnancy

