

### Anti-DNA viruses: Polymerase inhibitors.

Nucleoside analogues with modified sugars.

1) Acyclovir (Zovirax)

Synthetic analog of deoxyguanosine with an **acyclic sugar part**.

Prodrug activated into triphosphate becoming a **competitive inhibitor to viral DNA polymerase**.

Widely effective even to **Herpes virus**.

2) Famciclovir

Prodrug with enhanced bioavailability.

Approved for **herpes simplex & herpes zoster**.

Interfere with viral nucleic acid replication.

### Anti-DNA viruses: Polymerase inhibitors.

Nucleoside analogues with heterocyclic basic moiety.

1) Ribavirin

Prodrug, broad spectrum (**against DNA & RNA viruses**)

Phosphorylated by kinases into triphosphate--> inhibits viral specific RNA, mRNA--> No nucleic acid synthesis.

**Less selective than acyclovir.**

### Anti-DNA viruses: translation inhibitors.

1) Interferon alfa

Cellular glycoproteins. Broad spectrum antivirals and immunomodulatory.

MOA: bind to specific cell-surface receptors on infected cells, inhibiting transcription and translation.

Tested for **DNA virus infections and RNA HCV**.

### Anti-reteroviruses/Anti-HIV agents

Nucleoside RT inhibitor

Zidovudine (ZDV, retrivir)

Structurally related to deoxythymidine.

Prodrug activated/converted by **cellular thymidine kinase** into 5' triphosphate.

MOA: Direct RT inhibition & prevents DNA chain elongation by attachment.

### Anti-reteroviruses/Anti-HIV agents

Non-nucleoside RT inhibitors

Nevirapine (dipyrido-diazepine deriv.)

MOA: binds to (hydrophobic) allosteric site on RT enzyme, thus disrupting the activity of the active site.

### Anti-reteroviruses/Anti-HIV agents

HIV protease inhibitors.

Saquinavir

MOA: by HIV protease inhibition 1) prevents post-translation processing 2) releases immature viral particles.

### Anti-reteroviruses/Anti-HIV agents

HCV RNA-dependent RNA-polymerase inhibitor (NS5B inhibitor)

Sofosbuvir (sovaldi)

Prodrug for **HCV ttt** (12 weeks)

MOA: activated in liver into triphosphate then inhibits NS5B protein RNA-dep. RNA polymerase which affects viral replication.

### Anti-influenza agents

Inhibitors of virus attachment, penetration & uncoating. Neuroaminidase inhibitors.

Amantadine & Rimantadine

Oseltamivir (Tamiflu)

MOA: Inhibits penetration of viral particles and uncoating of the genetic material.

Prodrug activated in liver; usually a phosphate salt.

For **prophylaxis & ttt of influenza A virus**.

Inhibits the removal of sialic acid from the surface viral glycoprotein enzyme, neuraminidase. thus, decreases infective level of virus & improves viral inactivation by respiratory mucus.

Tricyclic primary amines.

**Prophylaxis & ttt of influenza.**