A SHORT HISTORY OF ANTIVIRAL DRUGS

Approximately 90 antiviral drugs have been approved worldwide since the 1960s; medicines to treat COVID-19 are the most recent. Here we look at how antivirals work and some key drugs.

Note: All dates are for US Food and Drug Administration approvals.

1963   First approved antiviral
Idoxuridine is approved as a topical treatment for keratitis caused by the herpes simplex virus.

1970   First systemic antiviral
Vidarabine is approved for the systemic treatment of herpes virus infections.

1980   First highly selective antiviral
Acyclovir treats herpes virus infections and has few side effects.

1980   First antiviral for HIV
Azidothymidine is approved as the first antiviral targeting HIV.

1990   First protease inhibitor
Saqinavir treats HIV and is the first approved protease inhibitor antiviral.

1995   Antivirals for influenza
Oseltamivir (Tamiflu) and zanamivir are approved to treat influenza.

1997   First antiviral for COVID-19
Remdesivir is approved to treat COVID-19 in hospitalized patients.

HOW ANTIVIRALS WORK

Antiviral drugs can target features of viruses themselves or pathways inside host cells that viruses exploit.

Preventing infection of new cells
Some antivirals target viral proteins or host-cell mechanisms to stop viruses from entering our cells.

Blocking viral genome copying
Some antivirals mimic the bases that make up viral genomes and cause viruses to introduce errors when copying their genetic material.

Stopping viral protein activation
Protease inhibitors stop the production of new virus particles by interfering with enzymes that make functional viral proteins.

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