TARGETING HEPATITIS C: HOW NEW TREATMENTS WORK

There are ~185 million people with Hepatitis C infection worldwide but new treatments mean that most people with access to therapy can now be cured. By Dawn Connolly.

TRAVELLING THE WORLD
The hepatitis Virus (HCV) is bloodborne and in developed countries is most commonly transmitted by sharing needles or other drug-injecting equipment. Acute infection is usually asymptomatic, but around 75–85% of people go on to develop chronic infection and, if untreated or if treatment fails, 5–20% develop cirrhosis within 20–30 years and 1–5% die from cirrhosis or liver cancer.

In the UK, 30% of the 240,000 people diagnosed with chronic hepatitis C are infected with genotypes 1 or 3. Prevalence and disease burden is increasing.

BALANCING COSTS WITH BENEFITS
For more than a decade, standard therapy was peglated interferon and ribavirin, which had severe side effects and was only effective in around 50% of genotype 1 and 75% of genotype 2/3 patients. Boceprevir and telaprevir, which target HCV specific proteins, improved cure rates to about 70% in genotype 1 infected patients.

Protease inhibitors are translated into a polyprotein.

Cysteine proteases inhibitors, such as pipeline drug telaprevir, inhibit cysteine, which is an essential host factor in the HCV life cycle.

Ribavirin possesses broad spectrum antiviral activity against several RNA and DNA viruses. It is effective only alone but works synergistically with peglated interferons and direct acting antivirals. The exact mechanism of action is not well established.

RNA polyA polymerase makes copies of viral RNA.

No data

VIRAL REPLICATION AND DRUG TARGETS
HCV is a single stranded RNA flavivirus, which constantly mutates, enabling it to escape attack by the immune system. The HCV genome is translated into a polyprotein, which is further processed by host and viral proteases to produce three structural and seven non-structural proteins. A greater understanding of the HCV genome and proteins has enabled the development of direct-acting antivirals.

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