

# Sofosbuvir (*Sovaldi*)

## Table of Contents

- [Sofosbuvir \*Sovaldi\* Editor's Summary](#)
- [Drug Summary](#)
- [Class and Mechanism](#)
- [Manufacturer for United States](#)
- [Cost and Medication Access](#)
- [Adverse Effects](#)
- [Key Drug Interactions](#)

## Drug Summary

Sofosbuvir has been a breakthrough new medication for the treatment of patients with chronic hepatitis C. Sofosbuvir has a number of ideal properties, including pangenotypic activity, once daily dosing, no meal restrictions, few adverse effects, minimal drug-drug interactions, high genetic barrier to resistance, good safety and efficacy in patients with advanced liver disease, and excellent sustained virologic response rates in patients with unfavorable baseline characteristics. In the new AASLD-IDS A hepatitis C guidelines, the combination of sofosbuvir plus peginterferon plus ribavirin is the recommended regimen for patients with genotype 1,4,5, and 6 infection. In addition, for patients ineligible to receive interferon, sofosbuvir plus simeprevir (with or without ribavirin) is recommended, but this combination is not an FDA-approved regimen. For patients with genotype 2 or 3, the combination of sofosbuvir plus ribavirin is recommended. The use of sofosbuvir in combination with ribavirin provides the first FDA approved all oral therapy for hepatitis C. Of note, the activity against genotype 3 appears less than with genotype 2 and treatment of genotype 3 infection requires a longer all-oral course of treatment than with genotype 2. Sofosbuvir currently has a major role in the treatment of chronic HCV infection, but the extraordinarily high cost has served as a major barrier for more widespread use and treatment of persons with chronic HCV infection.

---

## Class and Mechanism

Sofosbuvir (*Sovaldi*) is a nucleotide analog inhibitor of hepatitis C virus NS5B polymerase—the key enzyme mediating HCV RNA replication. Sofosbuvir is a prodrug and after ingestion it is rapidly converted to GS-331007, the predominant circulating drug that accounts for greater than 90% of the systemically active drug. The compound GS-331007 is efficiently taken up by hepatocytes, whereby cellular kinases convert GS-331007 to its pharmacologically active uridine analog 5'-triphosphate form (GS-461203). This triphosphate compound mimics the natural cellular uridine nucleotide and is incorporated by the HCV RNA polymerase into the elongating RNA primer strand, resulting in chain termination. The active form GS-461203 targets the NS5B catalytic site and acts as a non-obligate chain terminator. The active compound (GS-461203) does not inhibit host DNA polymerases, RNA polymerases, or mitochondrial RNA polymerase.

## Manufacturer for United States

Gilead Sciences is the manufacturer for sofosbuvir (*Sovaldi*) ([Figure 1](#)). The drug sofosbuvir was previously known as GS-7977 and was originally developed by Pharmasset as compound PSI-7977. The medication PSI-7977 was discovered as the more active diastereoisomer of the parent compound PSI-7851.

---

## Cost and Medication Access

The wholesale acquisition cost (WAC) for sofosbuvir is \$1,000 per 400 mg pill. Accordingly, the cost for the sofosbuvir component in a 12-week treatment course is \$84,000 (and the total regimen cost is depends on the other medications used in combination with sofosbuvir). For a 24-week course of sofosbuvir, the WAC is \$168,000. Gilead Sciences has an active sofosbuvir patient assistance program for eligible patients with hepatitis C who do not have insurance and are not covered by Medicaid or Medicare. Information regarding the Gilead Sciences sofosbuvir patient assistance program can be obtained at the [Support Path for Sovaldi and Harvoni](#) web site and by contacting them directly by phone at 1-855-769-7284 (hours of operation Monday through Friday between 9:00 am and 8:00 pm Eastern Standard Time).

---

## Adverse Effects

Sofosbuvir is generally well-tolerated. The most common adverse effects observed with sofosbuvir, when used in combination with ribavirin, have been fatigue and headache. Sofosbuvir is pregnancy category B. To report suspected adverse reactions, contact (1) Gilead Sciences, Inc. at 1-800-GILEAD-5 or (2) the FDA at 1-800-FDA-1088.

---

## Key Drug Interactions

The major concern with drug interactions exists with medications that are strong inducers of intestinal P-gp, such as rifampin and St. John's wort, since these compounds may significantly lower sofosbuvir and GS-331007 levels. The coadministration of sofosbuvir with the following medications is not recommended because these medications may significantly lower sofosbuvir levels:

- Anticonvulsants: carbamazepine, oxycarbazepine, phenobarbital, and phenytoin
- Antimycobacterials: rifabutin, rifampin, rifapentine
- Herbal Supplements: St. John's wort (*Hypericum perforatum*)
- HIV Protease Inhibitors: tipranavir-ritonavir

For complete information on sofosbuvir-related drug interactions, see the [Drug Interactions section in the Sofosbuvir \(Sovaldi\) Prescribing Information](#).

---



## Figures

**Figure 1 Sofosbuvir (*Sovaldi*) Pill Bottle**

Photo: Andrew Karpenko, University of Washington



**Figure 2 Sofosbuvir (Sovaldi) Pill**

Photo: Andrew Karpenko, University of Washington



---

© [Hepatitis C Online](https://www.hepatitisc.uw.edu)

PDF created December 15, 2018, 11:31 am

The most up to date version of this content may be obtained from:  
<https://www.hepatitisc.uw.edu/page/treatment/drugs/sofosbuvir-drug>