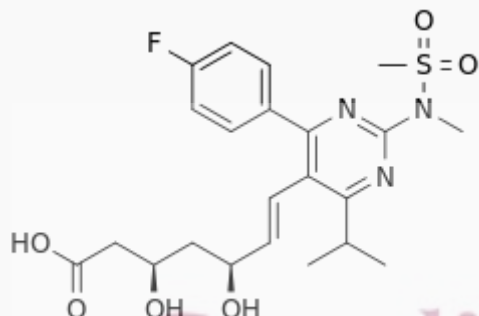


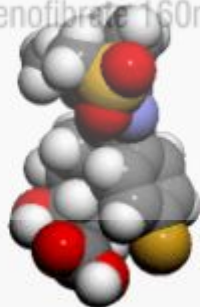
Rosuvastatin

Rosuvastatin



Creolip® F

Rosuvastatin Calcium 10mg +
Fenofibrate 160mg Tablet



Systematic (IUPAC) name

5*S*,6*E*)-7-[4-(4-fluorophenyl)-2-(*N*-methylmethanesulfonamido)-6-(propan-2-yl)pyrimidin-5-yl]-3,5-dihydroxyhept-6-enoic acid

Clinical data

Trade names

Crestor

AHFS/Drugs.com

[monograph](#)

MedlinePlus

[a603033](#)

Pregnancy

AU: D

category

US: X (Contraindicated)

Legal status	AU: Prescription Only (S4) UK: Prescription-only (POM) US: R-only
Routes of administration	oral
Pharmacokinetic data	
Bioavailability	20% ^[1]
Protein binding	88% ^[1]
Metabolism	Liver (CYP2C9 (major) and CYP2C19 -mediated; only minimally (~10%) metabolised) ^[1]
Biological half-life	19 hours ^[1]
Excretion	Faeces (90%) ^[1]
Identifiers	
CAS Registry Number	287714-41-4 ✓
ATC code	C10AA07
PubChem	CID: 446157
IUPHAR/BPS	2954
DrugBank	DB01098 ✓
UNII	413KH5ZJ73 ✓
KEGG	D01915 ✗
ChEBI	CHEBI:38545 ✗
ChEMBL	ChEMBL1496 ✗
PDB ligand ID	FBI (PDBe , RCSB PDB)
Chemical data	
Formula	C₂₂H₂₈F₃N₃O₆S
Molecular mass	481.539
SMILES [show]	
InChI [show]	
✗ (what is this?) (verify)	





Rosuvastatin (marketed by [AstraZeneca](#) as Crestor) 10 mg tablets

Rosuvastatin, marketed as **Crestor**, is a member of the [drug](#) class of [statins](#), used in combination with exercise, diet, and weight-loss to treat [high cholesterol](#) and related conditions, and to prevent [cardiovascular disease](#). It was developed by [Shionogi](#). Crestor is the fourth-highest selling drug in the United States, accounting for approx. \$5.2 billion in sales in 2013.^[2]

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Rosuvastatin Calcium 10mg +
Fenofibrate 160mg Tablet



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Medical uses[\[edit\]](#)

The primary use of rosuvastatin is for the treatment of [dyslipidemia](#).^[3] It is recommended to be used only after other measures such as diet, exercise, and weight reduction have not improved cholesterol levels.^[3]

Side effects and contraindications[\[edit\]](#)

Side effects are uncommon. The following side effects should be reported to the prescribing doctor if they persist or get worse:^[4]

- [constipation](#)
- [heartburn](#)
- [dizziness](#)
- [insomnia](#)

- [depression](#)
- [joint pain](#)
- [cough](#)
- [memory loss](#) or [forgetfulness](#)
- [confusion](#)

The following rare side effects are more serious. Like all statins, rosuvastatin can possibly cause [myopathy](#), [rhabdomyolysis](#). Stop taking rosuvastatin and contact the prescribing doctor if any of these occur:^{[4][5]}

- muscle pain, tenderness, or weakness
- lack of energy
- [fever](#)
- [chest pain](#)
- [jaundice](#): yellowing of the skin or eyes
- dark colored, or foamy urine
- pain in the upper right part of the abdomen
- [nausea](#)
- extreme tiredness
- weakness
- unusual bleeding or bruising
- loss of appetite
- [flu](#)-like symptoms
- [sore throat](#), [chills](#), or other signs of [infection](#)

If any signs of an allergic reaction develop, contact an emergency medical service immediately.^[6]

- [rash](#)
- [hives](#)
- [itching](#)
- difficulty [breathing](#) or [swallowing](#)
- swelling of the face, throat, tongue, lips, eyes, hands, feet, ankles, or lower legs
- [hoarseness](#)
- [numbness](#) or [tingling](#) in fingers or toes

Rosuvastatin has multiple [contraindications](#), conditions that warrant withholding treatment with rosuvastatin, including hypersensitivity to rosuvastatin or any component of the formulation, active liver disease, elevation of serum [transaminases](#), pregnancy, or breast-feeding.^[6] Rosuvastatin must not be taken while pregnant as it can cause serious harm to the unborn baby.^[6] In the case of breastfeeding, it is unknown whether rosuvastatin is passed through breastmilk, but due to the potential of disrupting the infant's lipid metabolism, patients should not breast feed while on rosuvastatin.^{[6][7]}

Drug interactions^[edit]

The following drugs can have negative interactions with rosuvastatin and should be discussed with the prescribing doctor:^[4]

- [Anticoagulants](#) ('blood thinners') can affect the removal of rosuvastatin, examples include: [warfarin](#) (Coumadin); [cimetidine](#) (Tagamet); [cyclosporine](#) (Neoral, Sandimmune); ketoconazole (Nizoral)
- Additional medications for high cholesterol such as [clofibrate](#) (Atromid-S), [fenofibrate](#) (Tricor), [gemfibrozil](#) (Lopid), and [niacin](#) (Niaspan, Niacor);
- Specific [HIV protease inhibitors](#) including [atazanavir](#) (Reyataz), taken with [ritonavir](#) (Norvir) and [lopinavir](#) and [ritonavir](#) (Kaletra); and [spironolactone](#) (Aldactone).

- Alcohol intake should be reduced while on rosuvastatin in order to decrease risk of developing liver damage.^[5]
- Aluminum and magnesium hydroxide antacids such as [Mylanta](#) and [Maalox](#), should not be taken within two hours of taking rosuvastatin^[5]
- Coadministration of Rosuvastatin with [Eluxadoline](#) may increase the risk of Rhabdomyolysis and [myopathy](#) caused by the former.^[6]

Structure^[edit]

Rosuvastatin has structural similarities with most other synthetic [statins](#), e.g., [atorvastatin](#), [cerivastatin](#) and [pitavastatin](#), but unlike other statins rosuvastatin contains [sulfur](#).

Crestor is actually rosuvastatin calcium,^[9] in which calcium replaces the hydrogen in the [carboxylic acid](#) group on the right of the two structure diagrams.

Mechanism of action^[edit]

Further information: [Statin](#)

Rosuvastatin is a [competitive inhibitor](#) of the enzyme [HMG-CoA reductase](#), having a mechanism of action similar to that of other statins.^[10] Its approximate elimination half life is 19 h and its time to peak plasma concentration is reached in 3–5 h following oral administration.^[11]

Putative beneficial effects of rosuvastatin therapy on chronic heart failure may be negated by increases in collagen turnover markers as well as a reduction in plasma [coenzyme Q10](#) levels in patients with chronic heart failure.^[12]

Pharmacokinetics^[edit]

Absolute [bioavailability](#) of rosuvastatin is about 20% and C_{max} is reached in 3 to 5 h; administration with food did not affect the [AUC](#). It is 88% [protein bound](#), mainly to [albumin](#).^[13]

Rosuvastatin is metabolized mainly by [CYP2C9](#) and not extensively metabolized; approximately 10% is recovered as [metabolite](#). It is excreted in [feces](#) (90%) primarily and the [elimination half-life](#) is approximately 19 h.^[13]

Indications and regulation^[edit]

Rosuvastatin is approved for the treatment of high [LDL cholesterol](#) ([dyslipidemia](#)), total cholesterol ([hypercholesterolemia](#)), and/or [triglycerides](#) ([hypertriglyceridemia](#)).^[14] In February 2010, rosuvastatin was approved by the FDA for the primary prevention of cardiovascular events.^[15]

As of 2004, rosuvastatin had been approved in 154 countries and launched in 56. Approval in the United States by the [FDA](#) came on August 12, 2003.^[16]

The results of the [JUPITER trial](#) (2008) suggested rosuvastatin may decrease the [relative risk](#) of [heart attack](#) and [stroke](#) in patients without [hyperlipidemia](#), but with elevated levels of [highly sensitive C-reactive protein](#). This could strongly impact medical practice by placing many patients on statin [prophylaxis](#) who otherwise would have been untreated.^{[17][18]} As a result of this clinical trial, the FDA approved rosuvastatin for the primary prevention of cardiovascular events.^[15]

The [AURORA trial](#) randomized 2776 patients undergoing hemodialysis due to kidney damage to receive either rosuvastatin or placebo. The randomized, double-blind study (2005 to 2009) found no difference in the two groups in the primary end-point, a combination of cardiovascular mortality, nonfatal myocardial infarction, or nonfatal stroke. The study found no difference in all-cause mortality among this population at a mean follow-up of 3.8 years.^[19]

Effects on cholesterol levels^[edit]

The effects of rosuvastatin on LDL cholesterol are dose-related. Rosuvastatin 10 to 40 mg was more efficacious in improving the lipid profile of patients with hypercholesterolemia than milligram-equivalent doses of atorvastatin and milligram-equivalent or higher doses of simvastatin and pravastatin.^[20]

Meta-analysis showed that rosuvastatin treatment (5 or 10 mg) is able to modestly increase levels of [HDL cholesterol](#) as well, as with other statins.^[21] A study in Japanese diabetics showed the low dose (2.5 mg) can also improve HDL levels.^[22] A 2014 Cochrane review determined there was good evidence for rosuvastatin lowering non-HDL levels linearly with dose.^[23] HDL increases by 7% with no dose effect noted.

FDA advisory for East Asian patients[\[edit\]](#)

According to the FDA, the risk of myopathy during rosuvastatin therapy may be increased in Asian Americans:

Because Asians appear to process the drug differently, half the standard dose can have the same cholesterol-lowering benefit in those patients, though a full dose could increase the risk of side-effects, a study by the drug's manufacturer, AstraZeneca, indicated.^[24]

Therefore, physicians should start Asian-American or East Asian patients at the lowest dose level.^[25]

Marketing and competition[\[edit\]](#)

Patent protection[\[edit\]](#)

The main patent protecting rosuvastatin (RE37,314 - due to expire in 2016) was challenged as being an improper reissue of an earlier patent. This challenge was rejected in 2010, confirming protection until 2016.^{[26][27][28][29]}

Marketing[\[edit\]](#)

The drug was billed as a "super-statin" during its clinical development; the claim was that it offers high potency and improved cholesterol reduction compared to rivals in the class. The main competitors to rosuvastatin are [atorvastatin](#) (Lipitor) and [simvastatin](#) (Zocor). However, people can also combine [ezetimibe](#) with either rosuvastatin or atorvastatin and other agents on their own, for somewhat similar augmented response rates. So far, some published information for comparing rosuvastatin, atorvastatin, and ezetimibe/simvastatin results is available, but many of the relevant studies are still in progress.^[10]

First launched in 2003, sales of rosuvastatin were \$129 million and \$908 million in 2003 and 2004, respectively, with a total patient treatment population of over 4 million by the end of 2004.^[citation needed] Typical per patient costs to the UK NHS are £18.03-26.02/month (compared to £0.85-1.37/month for [simvastatin](#)).

Debate and criticisms[\[edit\]](#)

In October 2003, several months after its introduction in [Europe](#), [Richard Horton](#), the editor of the [medical journal](#) *The Lancet*, criticized the way Crestor had been introduced. "AstraZeneca's tactics in marketing its cholesterol-lowering drug, rosuvastatin, raise disturbing questions about how drugs enter clinical practice and what measures exist to protect patients from inadequately investigated medicines," according to his editorial. *The Lancet's* editorial position is that the data for Crestor's superiority rely too much on extrapolation from the lipid profile data (surrogate end-points) and too little on hard clinical end-points, which are available for other statins that had been on the market longer. The manufacturer responded by stating that few drugs had been tested so successfully on so many patients. In correspondence published in *The Lancet*, AstraZeneca's CEO [Sir Tom McKillop](#) called the editorial "flawed and incorrect" and slammed the journal for making "such an outrageous critique of a serious, well-studied medicine."^[30]

In 2004, the consumer interest organization [Public Citizen](#) filed a [Citizen's Petition](#) with the FDA, asking that Crestor be withdrawn from the US market. On March 11, 2005, the FDA issued a

letter to Sidney M. Wolfe, M.D. of Public Citizen both denying the petition and providing an extensive detailed analysis of findings that demonstrated no basis for concerns about rosuvastatin compared with the other statins approved for marketing in the United States.^[31]

Myopathy^[edit]

As with all statins, there is a concern of [rhabdomyolysis](#), a severe undesired side effect. The FDA has indicated that "it does not appear that the risk [of rhabdomyolysis] is greater with Crestor than with other marketed statins", but has mandated that a warning about this side-effect, as well as a kidney toxicity warning, be added to the product label.^[9]

Diabetes mellitus^[edit]

[Statins](#) increase the risk of diabetes,^[32] consistent with FDA's review of the [JUPITER trial](#), which reported a 27% increase in investigator-reported diabetes mellitus in rosuvastatin-treated patients compared to placebo-treated patients.^[33]

Notes^[edit]

- ¹ [^] [Jump up to:^{a b c d e} Aggarwal, RK; Showkathali, R \(June 2013\). "Rosuvastatin calcium in acute coronary syndromes". *Expert Opinion on Pharmacotherapy* **14** \(9\): 1215–1227.^{doi:10.1517/14656666.2013.789860. PMID 23574635.}](#)
- ² [Jump up[^] "Top 100 Drugs for Q2 2013 by Sales". Retrieved 24 August 2013.](#)
- ³ [^] [Jump up to:^{a b} "Crestor". The American Society of Health-System Pharmacists. Retrieved 3 April 2011.](#)
- ⁴ [^] [Jump up to:^{a b c} "Rosuvastatin". MedlinePlus. U.S. National Library of Medicine. 15 June 2012. Retrieved 1 December 2012.](#)
- ⁵ [^] [Jump up to:^{a b c d e f} "Crestor". RxList. 14 November 2012. Retrieved 1 December 2012.](#)
- ⁶ [Jump up[^] "Package Insert" \(PDF\). AstraZeneca PLC. 2012. Retrieved 2012-10-18.](#)
- ⁷ [Jump up[^] "Rosuvastatin". LactMed. U.S. National Library of Medicine. Retrieved 1 December 2012.](#)
- ⁸ [Jump up[^] \[1\], FDA Eluxadoline Information.](#)
- ⁹ [^] [Jump up to:^{a b} "FDA Alert \(03/2005\) - Rosuvastatin Calcium \(marketed as Crestor\) Information". The Food and Drug Administration. March 14, 2005. Archived from \[the original\]\(#\) on 2005-03-05. Retrieved 2005-03-20. - This page is subject to change; the date reflects the last revision date.](#)
- ¹⁰ [^] [Jump up to:^{a b} Nissen SE, Nicholls SJ, Sipahi I, et al. \(2006\). "Effect of very high-intensity statin therapy on regression of coronary atherosclerosis: the ASTEROID trial" \(PDF\). *JAMA* **295** \(13\): 1556–65.^{doi:10.1001/jama.295.13.jpc60002. PMID 16533939.}](#)
- ¹¹ [Jump up[^] Retrieved from package insert on 2009-03-11](#)
- ¹² [Jump up[^] Ashton E, Windebank E, Skiba M, et al. \(January 2010\). "Why did high-dose rosuvastatin not improve cardiac remodeling in chronic heart failure? Mechanistic insights from the UNIVERSE study". *Int J Cardiol* **146** \(3\): 404–7.^{doi:10.1016/j.ijcard.2009.12.028. PMID 20085851.}](#)
- ¹³ [^] [Jump up to:^{a b} "Rosuvastatin Calcium". pp. Professional. Retrieved 21 September 2015.](#)
- ¹⁴ [Jump up[^] "Core Data Sheet, Crestor Tablets" \(PDF\). AstraZeneca PLC. June 17, 2003. Retrieved 2005-03-20. - NOTE: this is provider-oriented information and should not be used without the supervision of a physician.](#)
- ¹⁵ [^] [Jump up to:^{a b} http://www.accessdata.fda.gov/drugsatfda_docs/appletter/2010/021366s016ltr.pdf](#)
- ¹⁶ [Jump up[^] "FDA Approves New Drug for Lowering Cholesterol". The Food and Drug Administration. August 12, 2003. Archived from \[the original\]\(#\) on 2005-02-07. Retrieved 2005-03-20.](#)
- ¹⁷ [Jump up[^] Ridker PM, Danielson E, et al. \(November 2008\). "Rosuvastatin to Prevent Vascular Events in Men and Women with Elevated C-Reactive Protein". *N. Engl. J. Med.* **359** \(21\): 2195–207.^{doi:10.1056/NEJMoa0807646. PMID 18997196.}](#)
- ¹⁸ [Jump up[^] Brendan M. Everett, MD, MPH; Robert J. Glynn, ScD; Jean G. MacFadyen, BA; Paul M Ridker, MD, MPH \(2010\). "Rosuvastatin in the Prevention of Stroke Among Men and Women With Elevated Levels of C-Reactive Protein" \(PDF\). *Circulation* **121** \(1\): 143–150.^{doi:10.1161/CIRCULATIONAHA.109.874834. PMID 20026779.}](#)
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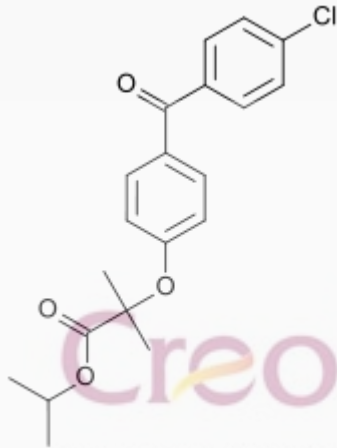
20. **Jump up**[^] Jones PH, Davidson MH, Stein EA, Bays HE, McKenney JM, Miller E, Cain VA, Blasetto JW. (2003). "Comparison of the efficacy and safety of rosuvastatin versus atorvastatin, simvastatin, and pravastatin across doses (STELLAR Trial)". *Am J Cardiol* **92** (2): 152–60. doi:10.1016/S0002-9149(03)00530-7. PMID 12860216.
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26. **Jump up**[^] "AstraZeneca's Crestor patent upheld;No generic competition until 2016"^[dead link]
27. **Jump up**[^] AstraZeneca (June 29, 2010). "CRESTOR Patent Upheld By US Court". *PR Newswire*. *United Business Media*. Retrieved 2012-04-25.
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Fenofibrate

Fenofibrate



Rosuvastatin Calcium 10mg +
Fenofibrate 160mg Tablet

Systematic (IUPAC) name

an-2-yl 2-{4-[(4-chlorophenyl)carbonyl]phenoxy}-2-methylpropanoate


Clinical data

Trade names	Fenoglide, Lipofen
AHFS/Drugs.com	monograph
MedlinePlus	a601052
Pregnancy category	US: C (Risk not ruled out)
Legal status	Legend
Routes of administration	Oral

Pharmacokinetic data

Protein binding	99%
Metabolism	glucuronidation



Biological half-life	20 hours
Excretion	urine (60%), feces (25%)
Identifiers	
CAS Registry Number	49562-28-9 ✓
ATC code	C10AB05
PubChem	CID: 3339
IUPHAR/BPS	7186
DrugBank	DB01039 ✓
UNII	U202363UOS ✓
KEGG	D00565 ✓
ChEBI	CHEBI:5001 ✓
ChEMBL	ChEMBL672 ✓
Chemical data	
Formula	$C_{20}H_{21}ClO_4$
Molecular mass	360.831 g/mol
SMILES [show]	
InChI [show]	
 (what is this?) (verify)	



Fenofibrate ([INN](#)), marketed as **Tricor** and under several other brand names, is a [drug](#) of the [fibrate](#) class. It is mainly used to reduce [cholesterol](#) levels in patients at risk of [cardiovascular disease](#). Like other fibrates, it reduces both [low-density lipoprotein](#) (LDL) and [very low density lipoprotein](#) (VLDL) levels, as well as increasing [high-density lipoprotein](#) (HDL) levels and reducing [triglyceride](#) levels.^[1] It is used alone or along with [statins](#) in the treatment of [hypercholesterolemia](#) and [hypertriglyceridemia](#).

Fenofibrate has been used since 1975, is one of the most commonly prescribed fibrates, and has a well known efficacy and tolerability profile.^[1]

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Medical uses^[edit]

Fenofibrate is mainly used for primary [hypercholesterolemia](#) or mixed [dyslipidemia](#). Fenofibrate appears to decrease the risk of [cardiovascular disease](#) and possibly [diabetic retinopathy](#) in those with [diabetes mellitus](#),^{[2][3]} and firstly indicated for the reduction in the progression of diabetic retinopathy in patients with Type 2 diabetes and existing diabetic retinopathy in Australia.^[4] It also appears to be helpful in decreasing [amputations](#) of the lower legs in this same group of people.^[5] Fenofibrate also has an unlabeled use as an added therapy of [high blood uric acid levels](#) in people who have [gout](#).^[6]

It is used in addition to [diet](#) to reduce elevated [low-density lipoprotein](#) cholesterol (LDL), total [cholesterol](#), [triglycerides](#) (TG), and apolipoprotein B (Apo B), and to increase [high-density lipoprotein](#) cholesterol (HDL) in adults with primary hypercholesterolemia or mixed dyslipidemia.^[7]

- Severe [hypertriglyceridemia](#) type IV or V

It is used in addition to diet for treatment of adults with severe hypertriglyceridemia. Improving glycemic control in diabetics showing fasting chylomicronemia will usually decrease the need for pharmacologic intervention.^[7]

Statins remain first line for treatment of blood [cholesterol](#). AHA Guidelines from 2013 did not find evidence for routine use of additional medications.^[8]

Contraindications^[edit]

Fenofibrate is contraindicated in:^[7]

- Patients with severe [renal impairment](#), including those receiving dialysis (2.7-fold increase in exposure, and increased accumulation during chronic dosing in patients with estimated [glomerular filtration rate](#) (eGFR)<30mL/min)
- Patients with active liver disease, including those with [primary biliary cirrhosis](#) and unexplained persistent [liver function test](#) (LFT) abnormalities
- Patients with preexisting [gallbladder](#) disease
- Nursing mothers
- Patients with known [hypersensitivity](#) to fenofibrate or fenofibric acid

Adverse effects^[edit]

The most common adverse events (>3% of patients with coadministered statins) are^[9]

- Headache
- Back pain
- [Nasopharyngitis](#)
- Nausea
- [Myalgia](#)
- Joint pain or [arthralgia](#)
- Diarrhea
- Upper respiratory tract infection

Precautions^[edit]

Musculoskeletal

- [Myopathy](#) and [rhabdomyolysis](#); increased risk when coadministered with a statin, particularly in the elderly and patients with [diabetes](#), [renal failure](#), [hypothyroidism](#)^[9]

Hepatotoxicity

- Can increase serum [transaminases](#); liver tests should be monitored periodically^[9]

Nephrotoxicity

- Can increase serum [creatinine](#) levels; renal function should be monitored periodically in patients with renal insufficiency^[9]

Biliary

- Can increase cholesterol excretion into the bile, leading to risk of [cholelithiasis](#); if suspected gallbladder studies are indicated. See "Interaction" section under [Bile Acid Sequestrant](#)^[9]

Coagulation/Bleeding

- Exercise caution in concomitant treatment with oral coumarin anticoagulants (e.g. [Warfarin](#)). Adjust the dosage of coumarin to maintain the prothrombin time/INR at desired level to prevent bleeding complications^[9]

Overdose^[edit]

"There is no specific treatment for overdose with fenofibric acid delayed-release capsules. General supportive care is indicated, including monitoring of [vital signs](#) and observation of clinical status". Additionally, [hemodialysis](#) should not be considered as an overdose treatment option because fenofibrate heavily binds to plasma proteins and does not dialyze well.^[9]

Interactions^[edit]

The following drug interactions with fenofibrate is considered major and may need therapy modifications:

- Bile acid sequestrants (e.g. cholestyramine, colestipol, etc.): If taken together, bile acid resins may bind to fenofibrate, resulting in a decrease in fenofibrate absorption. In order to maximize absorption, patients need to separate administration by at least 1 hour before or 4–6 hours after taking the bile acid sequestrant.^{[9][10]}

- Immunosuppressants (e.g. cyclosporine or tacrolimus): There is an increased risk of renal dysfunction with concomitant use of immunosuppressants and fenofibrate. Please approach with caution when coadministering additional medications that decrease renal function.^[11]
- Vitamin K antagonists (e.g. warfarin): As previously mentioned, fenofibrate interacts with coumarin anticoagulants to increase the risk of bleeding. Dosage adjustment of Vitamin K antagonist may be necessary.^[9]
- Statins: Combination of statins and fenofibrate may increase the risk of rhabdomyolysis or myopathy.^[12]

Mechanism of action^[edit]

"In summary, enhanced catabolism of triglyceride-rich particles and reduced secretion of VLDL underlie the hypotriglyceridemic effect of fibrates, whereas their effect on HDL metabolism is associated with changes in HDL [apolipoprotein](#) expression."^[13]

Fenofibrate is a fibric acid derivative, a [prodrug](#) comprising fenofibric acid linked to an isopropyl ester. It lowers lipid levels by activating [Peroxisome proliferator-activated receptor alpha](#) (PPAR α). PPAR α activates [lipoprotein lipase](#) and reduces apoprotein CIII, which increases lipolysis and elimination of triglyceride-rich particles from plasma.^[13]

PPAR α also increases apoproteins AI and AII, reduces [very low-density lipoprotein](#) (VLDL) and [low-density lipoprotein](#) (LDL) containing apoprotein B, and increases [high-density lipoprotein](#) (HDL) containing apoprotein AI and AII.

Formulations^[edit]

Fenofibrate is available in several [formulations](#) and is sold under several brand names, including Tricor by AbbVie, Lipofen by Kowa Pharmaceuticals America Inc, Lofibra by [Teva](#), Lipanthyl, Lipidil, and Supralip by [Abbott Laboratories](#), Fenocor-67 by Ordain Health Care, Fibractiv 105/35 by Cogentrix Pharma (India), Fenogal by SMB Laboratories, Antara by Oscient Pharmaceuticals, Tricheck by Zydus (CND), Atorva TG by Zydus Medica, Golip by GolgiUSA and Stanlip by Ranbaxy (India). Different formulations may differ in terms of [pharmacokinetic](#) properties, particularly [bioavailability](#); some must be taken with meals, whereas others may be taken without regard to food.^[14]

The active form of fenofibrate, fenofibric acid, is also available in the United States, sold as Trilipix. Fenofibric acid may be taken without regard to the timing of meals.^{[9][15]}

When fenofibrate and a statin are given as combination therapy, it is recommended that fenofibrate be given in the morning and the statin at night, so that the peak dosages do not overlap.^[16]

Controversy^[edit]

In the United States, Tricor was reformulated in 2005. This reformulation is controversial, as it is seen as an attempt to stifle competition from generic equivalents of the drug,^[17] and is the subject of [antitrust](#) litigation by generic drug manufacturer [Teva](#).^[17] Also available in the United States, Lofibra is available in 54 and 160 mg tablets, as well as 67, 134, and 200;mg [micronized](#) capsules.^[18] Generic equivalents of Lofibra capsules are currently available in all three strengths in the United States. In Europe, it is available in either coated tablet or capsule; the strength range includes 67, 145, 160 and 200 mg. The differences among strengths are a result of altered [bioavailability](#) (the fraction absorbed by the body) due to particle size. For example, 200 mg can be replaced by 160 mg micronized fenofibrate. The 145 mg strength is a new strength that appeared in 2005-2006 which also replaces 200 or 160 mg as the fenofibrate is nanonised (i.e. the particle size is below 400 nm).

History^[edit]

Fenofibrate was first synthesized in 1974 as a derivative of [clofibrate](#), and was launched on the French market shortly thereafter. It was initially known as *procetofen*, and was later

renamed *fenofibrate* to comply with [World Health Organization International Nonproprietary Name](#) guidelines.^[19]

Fenofibrate was developed by Groupe Fournier SA of France, which was acquired in 2005 by Solvay Pharmaceuticals, a [business unit](#) of the Belgian corporation [Solvay S.A.](#) In 2009, Solvay was in turn acquired by Abbott Laboratories (now AbbVie).

Research^[edit]

In adult rat studies using [pentylentetrazol](#) and lithium-[pilocarpine](#) models, Fenofibrate exhibits [anticonvulsant](#) properties comparable to the [ketogenic diet](#) potentially via agonism of PPAR- α . These findings may be useful for future ketogenic diet study protocols.^[20]

Notes^[edit]

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- [Jump up[^]](#) Stone NJ, Robinson JG, Lichtenstein AH, Bairey Merz CN, Blum CB, Eckel RH, Goldberg AC, Gordon D, Levy D, Lloyd-Jones DM, McBride P, Schwartz JS, Shero ST, Smith SC, Watson K, Wilson PW, Eddleman KM, Jarrett NM, LaBresh K, Nevo L, Wnek J, Anderson JL, Halperin JL, Albert NM, Bozkurt B, Brindis RG, Curtis LH, DeMets D, Hochman JS, Kovacs RJ, Ohman EM, Pressler SJ, Sellke FW, Shen WK, Smith SC, Tomaselli GF (2014). "2013 ACC/AHA guideline on the treatment of blood cholesterol to reduce atherosclerotic cardiovascular risk in adults: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines". *Circulation* **129** (25 Suppl 2): S1–45. [doi:10.1161/01.cir.0000437738.63853.7a](#).[PMID](#) [24222016](#).
- [^] [Jump up to:^{a b c d e f g h i i}](#) Fenofibric Acid FDA Label Prescribing Information "[FDA Label Information](#)" (PDF). FDA.
- [Jump up[^]](#) Product Information: TriCor(TM), fenofibrate. Abbott Laboratories, North Chicago, IL, 1998.
- [Jump up[^]](#) Product Information: Sandimmune(R) oral capsules, oral solution, intravenous injection, cyclosporine oral capsules, oral solution, intravenous injection. Novartis Pharmaceuticals Corporation, East Hanover, NJ, 2010.
- [Jump up[^]](#) Product Information: TRICOR(R) oral tablets, fenofibrate oral tablets. Abbott Laboratories, North Chicago, IL, 2007.
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17. **Jump up to:** ^a ^b Abbott's request to dismiss the antitrust charge over Tricor was rejected. FDANews, Drug Daily Bulletin, (June 1, 2006) [1]
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