Flurbiprofen

CAS Number: 5104-49-4
Protein binding: 99%
Molecular Weight: 244.26 g/mol
Molecular Formula: C_{15}H_{13}FO_2
Systematic (IUPAC): 2-((3-fluoro-4-phenylphenyl)propanoic acid
DRUG DESCRIPTION
Flurbiprofen is a nonsteroidal anti-inflammatory drug (NSAID) effective in treating fever, pain, and inflammation in the body. As a group, NSAIDs are non-narcotic relievers of mild to moderate pain of many causes, including injury, menstrual cramps, arthritis, and other musculoskeletal conditions. Since the response to different NSAIDs varies from patient to patient.
Flurbiprofen (FLUR-bi-PROE-fen) is used to relieve the inflammation, swelling, stiffness, and joint pain associated with rheumatoid arthritis and osteoarthritis. Flurbiprofen is also used to treat other conditions associated with inflammation and/or pain (e.g., menstrual cramps, muscular pain) as well as soft tissue injuries, such as tendonitis and bursitis. Flurbiprofen works by reducing hormones that cause inflammation and pain in the body.

SIDE EFFECTS
Most patients benefit from flurbiprofen and other NSAIDs with few side effects. However, serious side effects can occur, and generally tend to be dose related. Therefore, it is often desirable to use the lowest effective dose to minimize side effects. The most common side effects of flurbiprofen involve the gastrointestinal system. It can cause ulcerations, abdominal burning, pain, cramping, nausea, gastritis, and even serious gastrointestinal bleeding and liver toxicity. Sometimes, stomach ulceration and bleeding can occur without any abdominal pain. Black tarry stools, weakness, and dizziness upon standing may be the only signs of
internal bleeding. Rash, kidney impairment, ringing in the ears, and lightheadedness can also occur.
Abdominal pain, diarrhea, general feeling of illness, headache, indigestion, nausea, swelling due to fluid retention, urinary tract infection, constipation, difficulty sleeping, dizziness, drowsiness, gas or heartburn, increased sensitivity to the sun, nausea, vomiting, ringing in the ears, weight gain. If any develop or change in intensity, inform your doctor as soon as possible. Only your doctor can determine if it is safe for you to continue taking Flurbiprofen. Flurbiprofen can cause vision problems. If you experience a change in your vision, inform your doctor. Flurbiprofen slows the clotting process. If you are taking blood-thinning medication, Flurbiprofen should be taken with caution. The symptoms of Flurbiprofen overdose may include: Agitation, change in pupil size, coma, disorientation, dizziness, double vision, drowsiness, headache, nausea, semiconsciousness, shallow breathing, stomach pain. If you suspect an overdose of Flurbiprofen, seek medical attention immediately.

**PRECAUTIONS**
You should have frequent checkups with your doctor if you take Flurbiprofen regularly. Ulcers or internal bleeding can occur without warning. If you are sensitive to or have ever had an allergic reaction to Flurbiprofen, aspirin, or similar drugs, or if you have had asthma attacks caused by aspirin or other drugs of this type, you should not take Flurbiprofen. Fatal attacks have occurred in people allergic to Flurbiprofen. Make sure your doctor is aware of any drug reactions you have experienced. This drug should be used with caution if you have kidney or liver disease. Kidney problems are
most likely to develop in such people, as well as in those with heart failure, those taking water pills, and older adults. If you have asthma, take Flurbiprofen with extra caution. Do not take aspirin or similar drugs while taking Flurbiprofen, unless your doctor tells you to do so. You may get drowsy. Do not drive, use machinery, or do anything that needs mental alertness until you know how Flurbiprofen affects you. Do not smoke cigarettes or drink alcohol; these increase irritation to your stomach and can make it more susceptible to damage from Flurbiprofen. If you are going to have surgery, tell your prescriber or health care professional that you are taking Flurbiprofen. Flurbiprofen can cause you to bleed more easily. Problems can arise if you need dental work, and in the day to day care of your teeth. Try to avoid damage to your teeth and gums when you brush or floss your teeth. The effects of Flurbiprofen during pregnancy have not been adequately studied. If you are pregnant or plan to become pregnant, inform your doctor immediately. In particular, you should not use Flurbiprofen in late pregnancy, as it can affect the developing baby's circulatory system. Flurbiprofen appears in breast milk and could affect a nursing infant. If Flurbiprofen is essential to your health, your doctor may advise you to discontinue breastfeeding until your treatment is finished.

**INTERACTION**

It is especially important to check with your doctor before combining Flurbiprofen with the following: Antacids, Aspirin, Alcohol, Alendronate, Cidofovir, Cyclosporine Entecavir; Herbal products that contain feverfew, garlic, ginger, or ginkgo biloba, Lithium,
Methotrexate; Other anti-inflammatory drugs (such as ibuprofen or prednisone), Beta blockers such as the blood pressure medications Inderal and Tenormin

Before taking flurbiprofen, tell your doctor if you are taking any of the following drugs:

*a blood thinner such as warfarin (Coumadin);
*a diuretic (water pill) such as furosemide (Lasix);
*cyclosporine (Gengraf, Neoral, Sandimmune);
   *lithium (Eskalith, Lithobid);
   *methotrexate (Rheumatrex, Trexall);
   *steroids (prednisone and others);
*aspirin or NSAIDs (non-steroidal anti-inflammatory drugs) such as diclofenac (Voltaren), etodolac (Lodine), fenoprofen (Nalfon), ibuprofen (Advil, Motrin), indomethacin (Indocin), ketoprofen (Orudis), ketorolac (Toradol), mefenamic acid (Ponstel), meloxicam (Mobic), nabumetone (Relafen), naproxen (Aleve, Naprosyn), piroxicam (Feldene), and others;
*an ACE inhibitor such as benazepril (Lotensin), captopril (Capoten), fosinopril (Monopril), enalapril (Vasotec), lisinopril (Prinivil, Zestril), moexipril (Univasc), perindopril (Aceon), quinapril (Accupril), ramipril (Altace), or trandolapril (Mavik); or
*a beta-blocker such as atenolol (Tenormin), carteolol (Cartrol), carvedilol (Coreg), labetalol (Normodyne, Trandate), metoprolol (Lopressor, Toprol), nadolol (Corgard), propranolol (Inderal, InnoPran), sotalol (Betapace), timolol (Blocadren), and others.

**PHARMACOLOGY**

Do not use this medication if you are allergic to flurbiprofen, or if you have:

*severe kidney disease; or
*a history of allergic reaction to aspirin or other NSAIDs.
Before taking flurbiprofen, tell your doctor if you are allergic to any drugs, or if you have:
* a history of heart attack, stroke, or blood clot;
* heart disease, congestive heart failure, high blood pressure;
* a history of stomach ulcer or bleeding;
* liver or kidney disease;
* asthma;
* polyps in your nose;
* a bleeding or blood clotting disorder; or
* if you smoke.
If you have any of these conditions, you may need a dose adjustment or special tests to safely take flurbiprofen.

CONSUMER INFORMATION
Flurbiprofen is used to treat pain or inflammation caused by arthritis. This medicine can increase your risk of life-threatening heart or circulation problems, including heart attack or stroke. Do not use this medicine just before or after having heart bypass surgery. Do not use this medication if you are allergic to flurbiprofen, or if you have:
* severe kidney disease; or
* a history of allergic reaction to aspirin or other NSAIDs.
Take this medication exactly as it was prescribed for you. Do not take the medication in larger amounts, or take it for longer than recommended by your doctor. Follow the directions on your prescription label. Take the missed dose as soon as you remember. If it is almost time for your next dose, skip the missed dose and take the
medicine at your next regularly scheduled time. Do not take extra medicine to make up the missed dose. Seek emergency medical attention if you think you have used too much of this medicine. Overdose symptoms may include nausea, vomiting, stomach pain, dizziness, drowsiness, black or bloody stools, coughing up blood, urinating less than usual or not at all, shallow breathing, and fainting. Do not use any other over-the-counter cold, allergy, or pain medication without first asking your doctor or pharmacist. Many medicines available over the counter contain medicines similar to flurbiprofen (such as aspirin, ibuprofen, ketoprofen, or naproxen). If you take certain products together you may accidentally take too much of this type of medication. Read the label of any other medicine you are using to see if it contains aspirin, ibuprofen, ketoprofen, or naproxen. Do not drink alcohol while taking flurbiprofen. Alcohol can increase the risk of stomach bleeding.

Flurbiprofen Dosing Information
Usual Adult Dose for Osteoarthritis:
50 mg orally 4 times a day or 100 mg orally 3 times a day.

The largest recommended single dose is 100 mg. Doses greater than 300 mg/day are not recommended.

Usual Adult Dose for Rheumatoid Arthritis:
50 mg orally 4 times a day or 100 mg orally 3 times a day.

The largest recommended single dose is 100 mg. Doses greater than 300 mg/day are not recommended.

Usual Adult Dose for Pain:
50 mg orally every 6 to 8 hours as needed for pain relief. The maximum daily dose should not exceed 300 mg.

Usual Adult Dose for Dysmenorrhea:
50 mg orally 4 times a day.

**Type**
small molecule

**Description**
Flurbiprofen, a propionic acid derivative, is a nonsteroidal anti-inflammatory agent (NSAIA) with antipyretic and analgesic activity. Oral formulations of flurbiprofen may be used for the symptomatic treatment of rheumatoid arthritis, osteoarthritis and anklylosing spondylitis. Flurbiprofen may also be used topically prior to ocular surgery to prevent or reduce intraoperative miosis. Flurbiprofen is structurally and pharmacologically related to fenoprofen, ibuprofen, and ketoprofen.

**Categories**
- Anti-inflammatory Agents
- Cyclooxygenase Inhibitors
- Analgesics
- Analgesics, Non-Narcotic
- Antipyretics
- Nonsteroidal Anti-inflammatory Agents (NSAIAs)

**Taxonomy**
- **Kingdom**: Organic
- **Classes**: Biphenyl and Derivatives
Substructures
Hydroxy Compounds
Acetates
Carboxylic Acids and Derivatives
Phenylacetates
Benzene and Derivatives
Biphenyl and Derivatives
Halobenzenes
Aromatic compounds
Aryl Halides

Pharmacology

Indication
Flurbiprofen tablets are indicated for the acute or long-term symptomatic treatment of rheumatoid arthritis, osteoarthritis and anklosing spondylitis. It may also be used to treat pain associated with dysmenorrhea and mild to moderate pain accompanied by inflammation (e.g. bursitis, tendonitis, soft tissue trauma). Topical ophthalmic formulations may be used pre-operatively to prevent intraoperative miosis.

Pharmacodynamics
Flurbiprofen, a nonsteroidal anti-inflammatory agent (NSAIA) of the propionic acid class, is structurally and pharmacologically related to fenoprofen, ibuprofen, and ketoprofen, and has similar pharmacological actions to other prototypica NSAIs. Flurbiprofen exhibits antiinflammatory, analgesic, and antipyretic activities. The commercially available flurbiprofen is a racemic mixture of (+)S- and (-) R-enantiomers. The S-
enantiomer appears to possess most of the anti-inflammatory, while both enantiomers may possess analgesic activity.

**Mechanism of Action**
Similar to other NSAIAAs, the anti-inflammatory effect of flurbiprofen occurs via reversible inhibition of cyclooxygenase (COX), the enzyme responsible for the conversion of arachidonic acid to prostaglandin G2 (PGG2) and PGG2 to prostaglandin H2 (PGH2) in the prostaglandin synthesis pathway. This effectively decreases the concentration of prostaglandins involved in inflammation, pain, swelling and fever. Flurbiprofen is a non-selective COX inhibitor and inhibits the activity of both COX-1 and -2. It is also one of the most potent NSAIAAs in terms of prostaglandin inhibitory activity.

**Absorption**
Flurbiprofen is rapidly and almost completely absorbed following oral administration. Peak plasma concentrations are reached 0.5 - 4 hours after oral administration.

**Metabolism**
Hepatic. Cytochrome P450 2C9 plays an important role in the metabolism of flurbiprofen to its major metabolite, 4’-hydroxy-flurbiprofen. The 4’-hydroxy-flurbiprofen metabolite showed little anti-inflammatory activity in animal models of inflammation.

**Route of Elimination**
Flurbiprofen is poorly excreted into human milk. Following dosing with flurbiprofen, less than 3% of flurbiprofen is excreted unchanged in the urine, with about 70% of the dose eliminated in the urine as parent drug and metabolites. Renal elimination is a significant pathway of elimination of flurbiprofen metabolites.

**Toxicity**

LD50=10 mg/kg (orally in dogs). Selective COX-2 inhibitors have been associated with increased risk of serious cardiovascular events (e.g. myocardial infarction, stroke) in some patients. Current data is insufficient to assess the cardiovascular risk of flurbiprofen. Flurbiprofen may increase blood pressure and/or cause fluid retention and edema. Use caution in patients with fluid retention or heart failure. Risk of GI toxicity including bleeding, ulceration and perforation. Risk of direct renal injury, including renal papillary necrosis. Anaphylactoid and serious skin reactions (e.g. exfoliative dermatitis, Stevens-Johnson syndrome, toxic epidermal necrolysis) may occur. Common adverse events include abdominal pain, constipation, diarrhea, dyspepsia, flatulence, GI bleeding, GI perforation, nausea, peptic ulcer, vomiting, renal function abnormalities, anemia, dizziness, edema, liver function test abnormalities, headache, prolonged bleeding time, pruritus, rash, tinnitus.
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BlackBerry: 28415C58

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Systematic (IUPAC): 2-(3-flouro-4-phenylphenyl)propanoic acid
**Carboplatin**

CAS Number: 41575-94-4  
Protein binding: Very low  
Molecular Formula: C₄H₉N₂O₆Pt  
Molecular Weight: 371.249 g/mol  
Systematic (IUPAC): Azanide; cyclobutane-1,1-dicarboxylic acid; platinum

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