Carbamazepine is 76% bound to plasma proteins. Carbamazepine is primarily metabolized in the liver by the cytochrome P450 3A4 (CYP3A4) isoenzyme. Carbamazepine undergoes two main metabolic pathways: the oxidization to carbamazepine-10,11-epoxide (TEN) and the conjugation to carbamazepine-conjugated metabolites. Carbamazepine-10,11-epoxide is a major metabolite, with only 3% of unchanged carbamazepine.

Carbamazepine extended-release capsules are composed of an extended-release matrix granulation. The matrix granulation contains gelatin, sodium lauryl sulfate and titanium dioxide, and is imprinted with black ink.

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Carbamazepine is a 5H-dibenz[b,f]azepine-5-carboxamide, and its structural formula is:

\[
\text{Carbamazepine} = \text{5H-dibenz}[b,f]\text{azepine-5-carboxamide}
\]

Carbamazepine is insoluble in water and soluble in alcohol and in acetone. Its molecular weight is 236.27. Its chemical name is \(N\)-methyl-5H-dibenz[b,f]azepine-5-carboxamide.

Carbamazepine is a barbiturate-like medication, with structural similarity to both barbiturates and aromatic amines. It was introduced in the United States in 1951.

Carbamazepine is used as a treatment for trigeminal neuralgia, which is characterized by short, intense pain primarily affecting the face. It is also used to treat certain seizure disorders, migraine headache, and conditions characterized by abnormal involuntary movements.

Carbamazepine is metabolized primarily in the liver by the cytochrome P450 enzyme CYP3A4, which generates the active metabolite carbamazepine-10,11-epoxide (CBZ-E). CBZ-E is subsequently metabolized by epoxide hydrolase to the inactive metabolite monoepoxide carbamazepine-10,11-epoxide (GDE).

Carbamazepine is also partially excreted via the kidneys. Approximately 10% of the dose is excreted as unchanged drug, and the remainder is excreted as various metabolites.

Carbamazepine has a rapid onset of action after oral administration. Peak plasma concentrations are typically achieved within 3 to 5 hours after a single dose. The half-life of carbamazepine is approximately 24 hours, which results in a steady state of drug concentration within 5 to 7 days.

Carbamazepine undergoes protein binding approximately 90%, which is similar to phenytoin. The drug's plasma half-life is reduced when administered with food or in the presence of other drugs that induce CYP3A4 or epoxide hydrolase inhibitors.

Carbamazepine is contraindicated in patients with a history of hematologic abnormalities, renal dysfunction, and certain genetic predispositions. It should be used cautiously in patients with hepatic disease, and its use is associated with an increased risk of suicidal behavior.

Carbamazepine is a Schedule V controlled substance in the United States, and its use is subject to legal restrictions. It is available in both oral and injectable formulations, and it is commonly prescribed as a capsule, tablet, or suspension.

Carbamazepine's long-term use is associated with an increased risk of suicidal behavior, particularly in patients with preexisting depression or other psychiatric disorders. Patients being treated with carbamazepine should be closely monitored for signs of suicidal behavior.
Carbamazepine is a white to off-white powder, practically insoluble in water, and sparingly soluble in ethanol. Carbamazepine extended-release capsules are light yellow to orange color with a mean diameter of 5.16 mm, and contain Carbamazepine as the active pharmaceutical ingredient. Carbamazepine extended-release capsules are available in 100 mg, 200 mg, and 400 mg strengths. Each capsule contains Carbamazepine, USP, 100 mg, 200 mg, or 400 mg, respectively, and the following inactive ingredients: lactose monohydrate, microcrystalline cellulose, croscarmellose sodium, hydroxypropyl methylcellulose, hydrous starch, magnesium stearate, titanium dioxide, and yellow iron oxide.

**Pharmacology**

Carbamazepine is a member of the dibenzazepine class of anticonvulsants and antipsychotics. It is a substrate of the cytochrome P450 3A4 (CYP3A4) enzyme system. Carbamazepine is extensively metabolized in the liver by the CYP3A4 enzyme system, and the resulting metabolites, including 10,11-epoxide, 11-keto, and 10,11-dihydro derivatives, are responsible for most of its therapeutic and adverse effects.

**Pharmacokinetics**

Carbamazepine is rapidly absorbed after oral administration, with peak serum concentrations occurring within 2 to 6 hours. The half-life of carbamazepine is approximately 30 hours, but it can vary widely depending on the individual's metabolic status. Carbamazepine is extensively metabolized in the liver, with the principal metabolites being 10,11-epoxide and 11-keto derivatives. These metabolites are then excreted in the urine.

**Indications**

Carbamazepine extended-release capsules are indicated for the treatment of:

- Partial seizures (also known as focal seizures).
- Secondarily generalized seizures (also known as generalized tonic-clonic seizures).
- Generalized tonic-clonic seizures (also known as grand mal seizures).
- Mixed seizures (both partial and secondarily generalized seizures).
- Complex partial seizures.
- Complex partial seizures with secondary generalization.
- True trigeminal neuralgia.
- Glossopharyngeal neuralgia.
- Acute and chronic pain associated with trigeminal neuralgia.

**Contraindications**

Carbamazepine extended-release capsules are contraindicated in patients with a history of hypersensitivity reactions to carbamazepine or any of its components. It is also contraindicated in patients with a history of agranulocytosis, aplastic anemia, or other hematologic abnormalities, myocarditis, or myositis sometimes resembling an acute viral infection.

**Warnings and Precautions**

- **Hematologic Abnormalities:** Carbamazepine can cause hematologic abnormalities, including agranulocytosis and aplastic anemia. Patients should be monitored for signs of hematologic toxicity, and the drug should be discontinued if such changes occur.
- **Myocarditis and Myositis:** Carbamazepine can cause myocarditis and myositis, sometimes resembling an acute viral infection. Patients should be monitored for signs of these conditions, and the drug should be discontinued if such changes occur.
- **Myelotoxicity:** Carbamazepine can cause myelotoxicity, including bone marrow suppression. Patients should be monitored for signs of myelotoxicity, and the drug should be discontinued if such changes occur.
- **Other Hypersensitivity Reactions:** Carbamazepine can cause a wide range of other hypersensitivity reactions, including skin rash, fever, and jaundice. Patients should be monitored for signs of these conditions, and the drug should be discontinued if such changes occur.

**Drug Interactions**

Carbamazepine is a substrate of the cytochrome P450 3A4 enzyme system, and it can interact with many other drugs that are also substrates of this enzyme system. These interactions can result in changes in the concentrations of the other drugs, which can lead to changes in their efficacy or toxicity. It is important to carefully consider these interactions when prescribing carbamazepine.

**Adverse Reactions**

The most common adverse reactions associated with carbamazepine are nausea, vomiting, dizziness, sedation, and rash. Other adverse reactions include headache, drowsiness, dizziness, and Bradycardia. In rare cases, carbamazepine can cause agranulocytosis or aplastic anemia. It is important to monitor patients for these adverse reactions and to discontinue the drug if they occur.

**Dosage and Administration**

Carbamazepine extended-release capsules are administered orally. The dosage should be individualized based on the patient's response and the clinical effect. The usual starting dose is 200 mg/day, and the dose can be increased by 200 mg every 2 to 3 days, up to a maximum of 1200 mg/day divided into two or more doses.

**Overdosage and Management**

Overdosage of carbamazepine can cause serious and potentially life-threatening adverse reactions. The signs and symptoms of overdose include nausea, vomiting, dizziness, sedation, and respiratory depression. In severe cases, respiratory depression can be life-threatening. It is important to monitor patients for these adverse reactions and to discontinue the drug if they occur. In the event of overdose, supportive care should be provided, including monitoring of vital signs, respiratory status, and hematologic parameters. In cases of respiratory depression, mechanical ventilation may be necessary. In cases of severe agranulocytosis or aplastic anemia, the drug should be discontinued and supportive care should be provided.

**Precautions**

Patients should be monitored for signs of hematologic toxicity, myocarditis, or myositis. Patients should also be monitored for signs of other hypersensitivity reactions, including skin rash, fever, and jaundice. It is important to consider the patient's metabolic status when prescribing carbamazepine, as it can interact with many other drugs that are also substrates of the cytochrome P450 3A4 enzyme system.
Given the anticonvulsant properties of carbamazepine, carbamazepine extended-release capsules may cause a dose decrease for the concomitant agent may be necessary. If a patient begins a course of the treatment with carbamazepine extended-release capsules, it is reasonable to monitor the patient's plasma levels of the concomitant agent. In some cases, the concomitant agent's levels may be elevated if carbamazepine is initiated together with the concomitant agent. Close monitoring of plasma levels of the concomitant agent is necessary in these cases.

The use of carbamazepine extended-release capsules may also increase the risk of infections. Infections can be serious and may lead to hospitalization or even death. Patients should be advised to report any signs of infection to their healthcare provider.

In some cases, carbamazepine extended-release capsules may cause serious problems such as skin reactions, including Stevens-Johnson syndrome and toxic epidermal necrolysis (TEN). These reactions can be life-threatening and require immediate medical attention. Patients should be advised to report any signs of skin reactions to their healthcare provider.

Carbamazepine extended-release capsules may also cause serious problems in people who have had a previous reaction to carbamazepine. Patients who have had a previous reaction to carbamazepine extended-release capsules should not use these capsules again.

In summary, carbamazepine extended-release capsules can cause serious problems in some patients. Patients should be advised to report any signs of serious problems to their healthcare provider immediately.

The possible side effects of carbamazepine extended-release capsules include:

- Serious side effects: Skin reactions, including Stevens-Johnson syndrome and toxic epidermal necrolysis (TEN)
- Less common side effects: Dizziness, drowsiness, disturbances of coordination, confusion, headache, and nausea
- Less common side effects in women: Changes in sex drive, menstrual irregularities, and breast changes

Patients should be advised to report any signs of side effects to their healthcare provider.

In conclusion, carbamazepine extended-release capsules can cause serious problems in some patients. Patients should be advised to report any signs of serious problems to their healthcare provider immediately. Patients should also be advised to report any signs of side effects to their healthcare provider.

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In conclusion, carbamazepine extended-release capsules can cause serious problems in some patients. Patients should be advised to report any signs of serious problems to their healthcare provider immediately. Patients should also be advised to report any signs of side effects to their healthcare provider.
Carbamazepine Extended-Release Capsules

**INDICATIONS AND USAGE**

Carbamazepine extended-release capsules are indicated for the treatment of:

- Partial seizures (with or without secondary generalization) of the tonic-clonic (grand mal) type
- Partial seizures of the complex type
- Partial seizures with secondary generalization
- Epilepsy of the Lennox-Gastaut syndrome

**CONTRAINDICATIONS**

Carbamazepine extended-release capsules are contraindicated in patients with a history of liver coma, glucose-6-phosphate dehydrogenase (G6PD) deficiency, and history of bone marrow depression.

**WARNING**

Carbamazepine extended-release capsules can cause serious side effects, including:

- Serious skin reactions, including Stevens-Johnson syndrome and toxic epidermal necrolysis
- Leukopenia, agranulocytosis, aplastic anemia, and pancytopenia
- Liver problems
- Blood disorders

**PRECAUTIONS**

General:

- Carbamazepine extended-release capsules should be used with caution in patients with a history of bone marrow depression, hepatic disease, or hematologic disorders.
- In patients with hepatic impairment, serum levels of carbamazepine may be increased, and caution should be exercised in dose selection.
- Use carbamazepine extended-release capsules with caution in patients with a history of bone marrow depression, hepatic disease, or hematologic disorders.
- Carbamazepine extended-release capsules should be used with caution in patients with a history of bone marrow depression, hepatic disease, or hematologic disorders.

**ADVERSE REACTIONS**

Drug Interactions:

- Carbamazepine extended-release capsules may cause serious skin reactions, including Stevens-Johnson syndrome and toxic epidermal necrolysis.
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**OVERDOSAGE**

Intravenous administration of carbamazepine may cause serious skin reactions, including Stevens-Johnson syndrome and toxic epidermal necrolysis.

**NURSING CONSIDERATIONS**

Carbamazepine extended-release capsules should be used with caution in pregnancy and breastfeeding.

**SUPPLIED**

Carbamazepine extended-release capsules are supplied in bottles of 30.

**REFERENCES**

For the most up to date information on management of carbamazepine overdose, please contact the poison control center.

**Pharmacist信息**

For the most up to date information on management of carbamazepine overdose, please contact the poison control center.