

Xanax: New drug for anxiety and panic disorders

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Abstract

Alprazolam is used to treat anxiety and panic disorders. It belongs to a class of medications called Benzodiazepines, which act on the brain and nerves in the CNS to produce a calming effect. It works by enhancing the effects of a certain natural chemical in the body (GABA). Xanax is available in various doses and forms. But commonly they are used as tablets. Available as Tablets, Capsules and pills. Xanax is the brand name of Alprazolam. They are scored, or indented, in three places, so one pill can be broken into four 0.25-mg pieces. There are also a number of similar looking generic versions of the drug. Alprazolam is fully available after oral administration and kinetic parameters are not affected by route of administration. With the exception of rapidity of onset, the pharmacodynamic profiles of IV and oral alprazolam are very similar after a 1.0-mg dose.

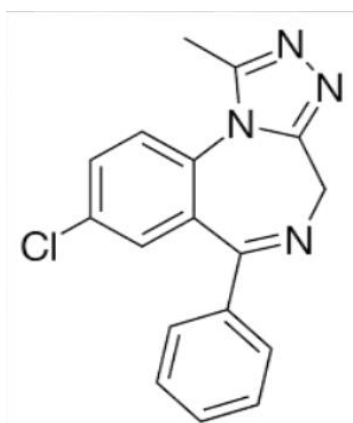
Keywords: XANAX, alprazolam, benzodiazepines, anxiety, panic disorders

Introduction

Anxiety is a normal and often healthy emotion. However, when a person regularly feels disproportionate levels of anxiety, it might become a medical disorder^[1].

Panic disorder is a type of anxiety disorder. It causes panic attacks, which are sudden feelings of terror when there is no real danger. You may feel as if you are losing control.

Xanax is a brand name for the drug alprazolam which is a triazolo-analog of the 1, 4-benzodiazepine class of central nervous system-active compounds. Xanax is used to treat anxiety and panic disorders and is the single most prescribed psychiatric medication in the United States. Xanax is a common drug and has a high likelihood of abuse.



8-Chloro-1-methyl-6-phenyl-4H-s-triazolo [4, 3-a] [1, 4] benzodiazepine

Fig 1: Chemical structure

Particulate formulations of benzodiazepines, such as diazepam, are used for nasal administration of diazepam drugs to patients. Multimodal particulate formulations of benzodiazepines and methods for their use, e.g. by nasal administration for the treatment of seizure, are also provided.



Fig 2: Xanax tablets

Xanax XR Tablets may be administered once daily, preferably in the morning. The tablets should be taken intact; they should not be chewed, crushed, or broken. The suggested total daily dose ranges between 3 to 6 mg/day. Dosage should be individualized for maximum beneficial effect.

Serious threats of Xanax overdose

People take Xanax to treat anxiety and panic disorders. Taking too much Xanax can cause mild to serious side effects, and taking other drugs along with Xanax can increase the risk of overdose. Some people use Xanax for sleeplessness, premenstrual disorder, and depression. However, the Food and Drug Administration (FDA) have not currently approved the drug for these uses.

Normal dose of Xanax

Doctors will typically prescribe doses of Xanax around 0.215 to 0.5 milligrams (mg) three times a day. Some people may require a dose of up to 4 mg per day. For

panic disorder, some doctors may prescribe doses up to 10 mg per day. Older adults and people with advanced liver failure may require lower doses of Xanax as they can be more sensitive to the effects of benzodiazepines.

Doctors aim to prescribe the lowest effective dose for the shortest duration to reduce the risk of dependence.

People who take too much Xanax may experience drowsiness, poor coordination, blurred vision, and confusion. Sometimes, people may experience delayed symptoms, while others may experience severe symptoms, such as coma and even death. Mixing Xanax with other medications and alcohol can cause an overdose. Sometimes, overdoses are unintentional. Some people may use Xanax alone or with other substances to harm themselves.

Xanax is a common drug and has a high likelihood of abuse. Researchers have shown that Xanax is the most common trusted source of benzodiazepine involved in emergency room visits related to the misuse of drugs. Xanax causes a depression in the central nervous system. CNS depressants causes calming and drowsy effects.

If you continually use Xanax, especially in larger quantities, you may develop a physical dependency on the medication. When this happens, your body doesn't function properly without it. Of note: It is possible for someone to become physically dependent on the drug even when used as prescribed. You can experience withdrawal symptoms if you suddenly stop using Xanax or suddenly decrease your dose significantly. Some users may continue taking it to avoid the onset of these unpleasant, potentially life-threatening withdrawal symptoms. The dangers of withdrawal from benzodiazepines like Xanax means that a person should not stop taking them without consulting with a medical provider. If they are possibly dependent on the medication, they should be tapered off gradually. Many addiction treatment programs offer supervised medical detox to provide a safer experience as you end your Xanax use and begin your recovery [6].

Properties

Molecular Formula	-	$C_{17}H_{13}ClN_4$
Synonyms-Xanax	-	Alzon
Zenax		
Xenor		
Colour	-	yellow, white and green

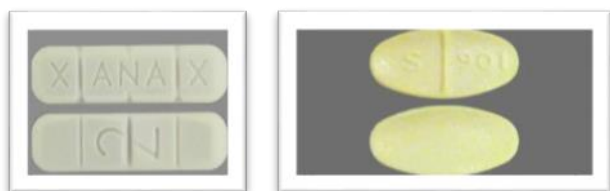


Fig 3a: Xanax pills, fig-3b: Yellow colored tablets

Taste	-	Bitter
Dose	-	for adults-0.25 to 0.5 mg PO 3 times per day for children- Max- 0.02 mg/kg/day PO
Molecular Weight	-	308.8 g/mol
Xlogp3	-	3.1
Melting Point	-	228-229.5°C
Solubility in Water	-	1 mg/L at 25 °C
Vapor Pressure	-	1.65 X 10 ⁻⁸ mm Hg at 25°C

Uses - Anxiety, Nausea and vomiting, Panic disorders [4].

Structures

Alprazolam 2D Structure

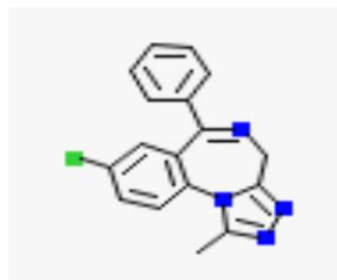


Fig 4.a: Alprazolam structure

Alprazolam 3D Structure

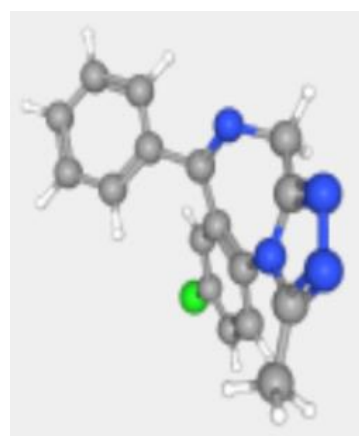


Fig 4.b: Alprazolam 3D structure

Mechanism of Action

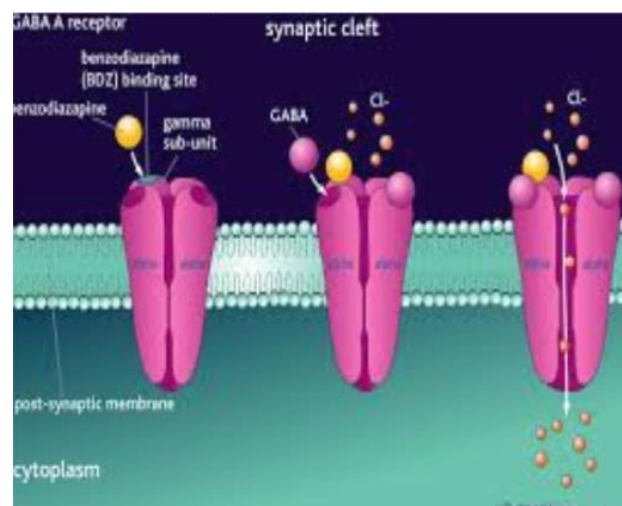


Fig 5: action of GABA receptors

They produces its action by binding to the GABA_A benzodiazepine receptor site and modulating its function.

↓
Binding of drug the GABA_A receptor, a chloride ion channel enhances the effects of GABA.

↓

When GABA binds the GABA_A receptor the channel opens and chloride enters the cell which makes it more resistant to depolarisation.

↓

Therefore it has a depressant effect on synaptic transmission to reduce anxiety

Side Effects

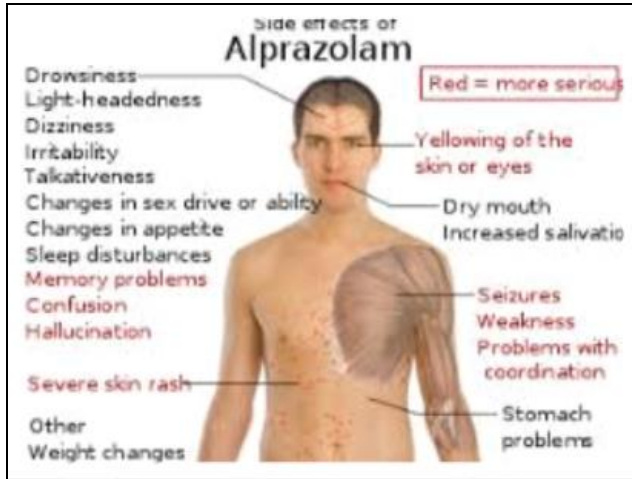


Fig 6: Side effects of Alprazolam

Possible side effects are

- Anterograde amnesia and problems related to concentration.
- Ataxia, slurred speech
- Urinary retention
- Dizziness, unsteadiness and fatigue.
- Jaundice (very rare)
- Hallucinations (rare)
- Seizures (less common) and Suicidal attempts [3].

Drug Interactions

▪ **Alprazolam Taken with Midazolam**

When these medicines are taken together, your liver may processes your anti-anxiety (or sleep) medicine more slowly.

▪ **Alprazolam Taken with Alcohol**

They can cause increased drowsiness, dizziness, muscle weakness, confusion, coma, and death if taken together.

▪ **Alprazolam Taken with Sodium Oxybate**

It can cause depression, low blood pressure, slow or shallow breathing, and impairment in thinking, judgment, and motor coordination. Occasionally, severe reactions may result in coma and even death.

Contraindications of Xanax

- Overweight
- Suicidal thoughts
- Alcohol intoxication
- Drug abuse
- Depression
- Wide-angle glaucoma
- Closed angle glaucoma
- Decreased lung function

- Chronic lung disease
- Liver problems
- Kidney disease with reduction in kidney function
- Sleep apnea
- Weakened patient
- Pregnancy
- A mother who is producing milk and breastfeeding
- Tobacco smoking [5].

Xanax tablets and oral solution

Xanax regular release and orally disintegrating tablets are available as 0.25 mg, 0.5 mg, 1 mg, and 2 mg tablets while extended release tablets are available as 0.5 mg, 1 mg, 2 mg, and 3 mg and oral solutions are available as 0.5 mg/5 mL and as 1 mg/10mL oral solutions. Alprazolam Intenol liquid is available in a bottle with a calibrated dropper with markings for various doses.



Fig 7.a: Xanax oral solution



Fig 7.b: Xanax tablets

Xanax Capsules

Xanax is also available in capsule form which is even widely used in different doses.



Fig 8: Xanax capsules

Xanax Pills

The highest strength dose of Xanax is a 3-mg extended-release tablet. That pill is triangular. Because of the wide variety of strengths and manufacturers and you should never take Xanax unless it's been specifically prescribed to you and came from its original prescription pill bottle.



Fig 9.a: Pills



Fig 9.b: Triangular pills

Xanax ingredients

Each Xanax Tablet for oral administration contains 0.25, 0.5, 1 or 2 mg Of Alprazolam. Xanax Tablets, 2 mg, are multi-scored and may be divided as shown below: Inactive ingredients such as Cellulose, corn starch, docusate sodium, lactose, magnesium stearate, silicon dioxide and sodium benzoate

Adverse Effects

During Pregnancy

Xanax is not safe to take during pregnancy. It can harm pregnancy. It is a pregnancy category D drug. The effects on pregnancy depend on when in the pregnancy you take Xanax. Taking Xanax during your first trimester (months 1 to 3) of pregnancy could raise your baby's risk of birth defects. These could include cleft lip, cleft palate, or more serious problems. These birth defects could affect the way your baby looks, develops, or functions for the rest of their life.

During second and third trimester- Taking Xanax during your second or third trimesters (months 4 to 9) of pregnancy can cause withdrawal syndrome in your baby. This is because Xanax can cause emotional or physical dependence or addiction in your baby. Little research exists on withdrawal in newborns but problems could include trouble breathing, trouble eating on their own, and dehydration. It's not known what longer-lasting effects could occur. Taking Xanax later in your pregnancy can also cause floppy infant syndrome. This means your baby may have weak muscles. They may not be able to control their head, arms, and legs, giving them a rag doll-like appearance. This condition may last 2 to 3 weeks after birth [6].

Breastfeeding

Increased infant irritability following withdrawal of breastfeeding occurred in a 1-week-old infant whose mother had taken alprazolam during pregnancy and continued to take it after delivery. This reaction probably indicates that there was sufficient alprazolam in breastmilk to prevent withdrawal. Reaction probably indicates that there was

sufficient alprazolam in breastmilk to prevent withdrawal [2].

Conclusion

Xanax overdose may lead to anxiety, drowsiness, impaired reflexes, coordination problems, coma and even death. The prescribed dose of Xanax according to the Body Mass Index should be taken. The other drugs used for anxiety and panic disorders are fluoxetine (Prozac), fluvoxamine (Luvox), sertraline (Zoloft), citalopram (celexa) etc. but they have serious side effects as they have increased the risk of suicidal thinking and behavior in children, adolescents, and young adults. Hence Xanax is found more efficient than other drugs.

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