

## PRODUCT INFORMATION

# ALODORM

Nitrazepam

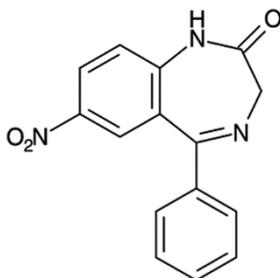


## NAME OF THE MEDICINE

Active ingredient : Nitrazepam

Chemical name : 7-nitro-5-phenyl-1,3-dihydro-2H-1,4-benzodiazepin-2-one

Structural formula :



Molecular formula : C<sub>15</sub>H<sub>11</sub>N<sub>3</sub>O<sub>3</sub>

Molecular weight : 281.3

CAS Registry no. : 146-22-5

## DESCRIPTION

Nitrazepam is a yellow, crystalline powder which is odourless and tasteless. It is almost insoluble in water, soluble in 120 parts of alcohol (95%), in 45 parts of chloroform, and in 900 parts of solvent ether. Nitrazepam has a melting point of 226° - 229°C.

Each tablet contains 5 mg of nitrazepam as the active ingredient. The tablets also contain the following inactive ingredients: lactose monohydrate, maize starch, pregelatinised maize starch, purified talc, colloidal anhydrous silica, magnesium stearate.

## PHARMACOLOGY

Nitrazepam is a member of the group of benzodiazepine agonists and exhibits sedative, anxiolytic, anticonvulsant and muscle relaxant effects. This is presumed to be the result of facilitating the action in the brain of gamma-aminobutyric acid (GABA), an endogenous inhibitor neurotransmitter.

Taken in the evening in recommended doses, nitrazepam induces sleep lasting 6 to 8 hours.

### Pharmacokinetics

#### Absorption

Nitrazepam is well and fairly rapidly absorbed from the gastrointestinal tract. The time to reach peak plasma concentrations following oral administration is about 2 hours (0.5 to 5 hours).

Peak plasma levels following a 10 mg single oral dose are about 68 to 108 ng/mL and following a 5 mg single oral dose about 25 to 50 ng/mL. Twelve hours after oral administration of 5 mg of nitrazepam, blood levels are about 12 to 38 ng/mL.

**Bioavailability.** In one study comparing oral with intravenous administration, bioavailability varied from 53 to 94% (average 78%).

## Distribution

Nitrazepam is lipophilic and readily crosses body membranes.

Cerebrospinal fluid (CSF) concentration of nitrazepam is about 10% total plasma level and similar to the protein free fraction in plasma. One study observed accumulation of nitrazepam in CSF.

Nitrazepam is found in saliva at lower concentrations than protein free levels in serum.

Nitrazepam has been shown to cross the placenta and reach concentrations between 50 and 90% of the concentration in maternal plasma. It is excreted in breast milk.

The volume of distribution has been found to be significantly higher in elderly immobilised patients than in young controls, whereas the volume of distribution in healthy elderly subjects was found to be similar to young healthy subjects.

**Protein Binding.** Nitrazepam is approximately 87% bound to plasma protein.

## Metabolism

The major pathway is conversion to 7-aminonitrazepam and then to 7-acetamido nitrazepam with subsequent hydroxylation. Opening of the diazepine ring to form 2-amino-5-nitrobenzophenone has also been reported. These metabolites have very weak pharmacological activity.

There is no evidence of nitrazepam dependent enzyme induction or inhibition during long term treatment.

Total plasma clearance has been estimated as  $4.1 \pm 2.0$  L/hour in young and  $4.7 \pm 1.5$  L/hour in elderly patients.

## Excretion

Nitrazepam is mainly excreted as urinary metabolites. During the first 120 hours after a single radiolabelled 10 mg oral dose, the total renal elimination was 70%. Only 1% or less of the administered dose is excreted as unchanged nitrazepam.

The main urinary excretion products are free or conjugated 7-aminonitrazepam and 7-acetamido nitrazepam. Individual variation of the total excreted metabolites is high, ranging between 17 and 99% of the administered dose. Of this, the conjugated metabolites made up an average of 57%.

One faecal excretion study indicates the possibility of limited biliary excretion of the metabolites.

**Half-life.** Nitrazepam is eliminated relatively slowly from the body. Following oral administration, half-life has been estimated to be from 16 to 48 hours (average 27 hours).

Half-life has been estimated to be significantly higher in elderly debilitated patients as opposed to healthy elderly subjects and young subjects.

**Clinical Implications of Pharmacokinetic Data.** Nitrazepam is absorbed at a variable rate and reaches peak concentrations on the average at 2 hours, but there is considerable interindividual variation in this. The drug crosses the blood-brain barrier and the placenta, and is excreted in milk.

Nitrazepam is metabolised to a significant extent by the liver and the primary route of elimination is urinary excretion of these metabolites. Thus hepatic or renal disease may require alteration of nitrazepam dosage. The elimination half-life of the drug varies from about 16 to 48 hours (average 27 hours) and the half-life in CSF appears to be twice as long as that in plasma.

Elderly debilitated patients may show a significant increase in elimination half-life and volume of distribution.

## INDICATIONS

Insomnia, organic and inorganic in origin.

## CONTRAINDICATIONS

Alodorm is contraindicated in:

- Patients with known hypersensitivity to benzodiazepines.
- Patients with chronic obstructive airway disease with incipient respiratory failure.
- Severe liver insufficiency.

## PRECAUTIONS

As with all patients taking CNS-depressant medications, patients receiving Alodorm should be warned not to operate dangerous machinery or motor vehicles until it is known that they do not become drowsy or dizzy from Alodorm therapy. Abilities may be impaired on the day following use. Patients should be advised that their tolerance for alcohol and other CNS depressants will be diminished and that these medications should either be eliminated or given in reduced dosage in the presence of Alodorm.

Following the prolonged use of Alodorm at therapeutic doses, withdrawal from the medication should be gradual. An individualised withdrawal timetable needs to be planned for each patient in whom dependence is known or suspected. Periods from four weeks to four months have been suggested. As with other benzodiazepines, when treatment is suddenly withdrawn, a temporary increase of sleep disturbance can occur after use of Alodorm (see **PRECAUTIONS - Dependence**).

In general, benzodiazepines should be prescribed for short periods only (e.g. 2 to 4 weeks). Continuous long-term use of Alodorm is not recommended. There is evidence that tolerance develops to the sedative effects of benzodiazepines. After as little as one week of therapy, withdrawal symptoms can appear following the cessation of recommended doses (e.g. rebound insomnia following cessation of a hypnotic benzodiazepine).

Complex behaviours have been reported with sedative hypnotics. These events can occur in sedative-hypnotic naive as well as in sedative-hypnotic experienced persons. These events can occur at normal therapeutic doses, and the risk appears to be increased when sedative-hypnotics are combined with alcohol or other CNS depressants or used at doses exceeding the maximum recommended dose. Discontinuation of sedative-hypnotics should be strongly considered for patients who reported complex behaviours whilst not fully awake after taking a sedative-hypnotic.

Rare cases of angioedema involving the tongue, glottis or larynx have been reported in patients after taking the first or subsequent doses of sedative-hypnotics. Some patients have had additional symptoms such as dyspnea, throat closing, or nausea and vomiting that suggest anaphylaxis. If angioedema involves the tongue, glottis or larynx, airway obstruction may occur and be fatal and patients should be advised to contact the emergency department of their nearest hospital as soon as possible.

Although hypotension has occurred only rarely, Alodorm should be administered with caution to patients in whom a drop in blood pressure might lead to cardiac or cerebral complications. This is particularly important in elderly patients.

Transient amnesia or memory impairment has been reported in association with the use of benzodiazepines.

Nitrazepam could increase the muscle weakness in myasthenia gravis and should be used with caution in this condition.

Caution should be used in the treatment of patients with acute narrow-angle glaucoma (because of atropine-like side effects).

In infants and young children, as well as in elderly, bedridden patients, bronchial hypersecretion and excessive salivation leading to aspiration/pneumonia may occur.

### **Use in Pregnancy (Category C)**

Benzodiazepines cross the placenta and may cause hypotonia, respiratory depression and hypothermia in the newborn infant. Continuous treatment during pregnancy and administration of high doses in conjunction with delivery should be avoided. Withdrawal symptoms in newborn infants have been reported with prolonged use of this class of drugs.

*Australian categorisation definition of Category C.* Drugs which, owing to their pharmacological effects, have caused or may be suspected of causing, harmful effects on the human foetus or neonate without causing malformations. These effects may be reversible. Accompanying texts should be consulted for further details.

### **Use in Lactation**

Caution should be exercised when Alodorm is given to a breastfeeding woman. Nitrazepam is excreted in human breast milk, and may cause drowsiness and feeding difficulties in the infant.

### **Paediatric Use**

Not approved for use as a hypnotic in children.

***Impaired Renal/Liver Function And Blood Dyscrasias.*** Patients with impaired renal or hepatic function should use benzodiazepine medication with caution and dosage reduction may be advisable. In rare instances some patients taking benzodiazepines have developed blood dyscrasias, and some have had elevations of liver enzymes. As with other benzodiazepines, periodic blood counts and liver function tests are recommended.

***Depression, Psychosis and Schizophrenia.*** Alodorm is not recommended as primary therapy in patients with depression and/or psychosis. In such conditions, psychiatric assessment and supervision are necessary if benzodiazepines are indicated. Benzodiazepines may increase depression in some patients, and may contribute to deterioration in severely disturbed schizophrenics with confusion and withdrawal. Suicidal tendencies may be present or uncovered and protective measures may be required.

***Paradoxical Reactions.*** Paradoxical reactions such as restlessness, agitation, irritability, aggressiveness, delusion, nightmares, psychoses, inappropriate behaviour and other adverse behavioural effects, acute rage and stimulation or excitement may occur; should such reactions occur, Alodorm should be discontinued.

***Geriatric or Debilitated Patients.*** Such patients may be particularly susceptible to the sedative effects of benzodiazepines and associated giddiness, ataxia and confusion, which may increase the possibility of a fall.

***Impaired Respiratory Function.*** Caution in the use of Alodorm is recommended in patients with respiratory depression. In patients with chronic obstructive pulmonary disease, benzodiazepines can cause increased arterial carbon dioxide tension and decreased arterial oxygen tension.

***Epilepsy.*** Abrupt withdrawal of benzodiazepines in patients with convulsive disorders may be associated with a temporary increase in the frequency and/or severity of seizures.

***Abuse.*** Caution must be exercised in administering Alodorm to individuals known to be addiction prone or those whose history suggests they may increase the dosage on their own initiative. It is desirable to limit repeat prescription without adequate medical supervision.

***Dependence.*** The use of benzodiazepines may lead to dependence, as defined by the presence of a withdrawal syndrome on discontinuation of the drug. Tolerance, as defined by a need to increase the dose in order to achieve the same therapeutic effect, seldom occurs in patients receiving recommended doses under medical supervision. Tolerance to sedation may occur with benzodiazepines, especially in those with drug seeking behaviour.

Withdrawal symptoms similar in character to those noted with barbiturates and alcohol have occurred following abrupt discontinuation of benzodiazepines. These symptoms can range from insomnia, anxiety, dysphoria, palpitations, panic attacks, vertigo, myoclonus, akinesia, hypersensitivity to light, sound and touch, abnormal body sensations (e.g. feelings of motion, metallic taste), depersonalisation, derealisation, delusional beliefs, hyperreflexia and loss of short term memory, to a major syndrome which may include convulsions, tremor, abdominal and muscle cramps, confusional states, delirium, hallucinations, hyperthermia, psychosis, vomiting and sweating. Such manifestations of withdrawal, especially the more serious ones, are more common in those patients who have received excessive doses over a prolonged period. However, withdrawal symptoms have also been reported following abrupt discontinuation of benzodiazepines taken continuously at therapeutic levels. Accordingly, Alodorm should be terminated by tapering the dose to minimise occurrence of withdrawal symptoms. Patients should be advised to consult with their physician before either increasing the dose or abruptly discontinuing the medication.

Rebound phenomena have been described in the context of benzodiazepine use. Rebound insomnia and anxiety mean an increase in the severity of these symptoms beyond pre-treatment levels following cessation of benzodiazepines. Rebound phenomena in general possibly reflect re-emergence of pre-existing symptoms combined with withdrawal symptoms described earlier. Some patients prescribed benzodiazepines with very short half-lives (in the order of 2 to 4 hours) may experience relatively mild rebound symptoms in between their regular doses. Withdrawal/rebound symptoms may follow high doses taken for relatively short periods.

***Interference with Clinical, Laboratory and Other Tests.*** Minor EEG changes, usually low voltage fast activity, of no known clinical significance, have been reported with benzodiazepine administration.

## INTERACTIONS WITH OTHER MEDICINES

The benzodiazepines, including nitrazepam, produce additive CNS depressant effects when co-administered with other medications which themselves produce CNS depression, e.g. barbiturates, alcohol, sedatives, tricyclic antidepressants, non-selective MAO inhibitors, phenothiazines and other antipsychotics, skeletal muscle relaxants, antihistamines or narcotic analgesics and anaesthetics (see **PRECAUTIONS**).

Nitrazepam undergoes oxidative metabolism, and consequently may interact with disulfiram or cimetidine, resulting in increased plasma levels of nitrazepam. Patients should be observed closely for evidence of enhanced benzodiazepine response during concomitant treatment with either disulfiram or cimetidine; some patients may require a reduction in benzodiazepine dosage.

The anticholinergic effects of other drugs, including atropine and similar drugs, antihistamines and antidepressants may be potentiated.

Interactions have been reported between some benzodiazepines and anticonvulsants, with changes in the serum concentration of the benzodiazepine or anticonvulsant. It is recommended that patients be observed for altered responses when benzodiazepines and anticonvulsants are prescribed together, and that serum level monitoring of the anticonvulsant be performed more frequently.

## ADVERSE EFFECTS

Alodorm is usually well tolerated.

### More Common Reactions

CNS depression including drowsiness, dizziness, fatigue, impairment of memory, ataxia, headache, confusion, vertigo, hangover feeling in the morning, slurred speech, decreased physical performance, numbed emotions, reduced alertness, muscle weakness, double vision and inattention have been reported. Unpleasant dreams and rebound insomnia have also been reported.

### Less Common Reactions

Rarely, hypotension, faintness, palpitation, rash or pruritus, gastrointestinal disturbances, changes in libido.

Very infrequently, paradoxical reactions may occur, e.g. excitement, stimulation, hallucinations, hyperactivity and insomnia. Also depressed or increased dreaming, disorientation, severe sedation, retrograde amnesia, headache, hypothermia, delirium tremens. Hypersecretion of saliva and bronchial mucus has occurred with doses of 0.7 mg/kg/day.

In infants and young children, as well as in the elderly, bed-ridden patients, bronchial hypersecretion and excessive salivation leading to aspiration/pneumonia may occur.

## DOSAGE AND ADMINISTRATION

**Adults** 1 to 2 tablets (5 to 10 mg) before retiring. This average dosage may be increased if necessary up to 20 mg for in-patients.

**Elderly Patients** ½ to 1 tablet.

**Children** Not approved for use as a hypnotic in children.

## OVERDOSAGE

### Symptoms

Overdosage of benzodiazepines is usually manifested by degrees of central nervous system depression ranging from drowsiness to coma. In mild cases, symptoms include drowsiness, mental confusion and lethargy. In more serious cases, symptoms may include ataxia, hypotonia, hypotension, respiratory depression, coma, and very rarely death.

### Treatment

In the management of overdosage with any medication, it should be borne in mind that multiple agents may have been taken.

Activated charcoal may reduce absorption of the drug if given within one to two hours of ingestion. In patients who are not fully conscious or have impaired gag reflex, consideration should be given to administering activated charcoal via a nasogastric tube, once the airway is protected. Cardiac and vital signs monitoring is recommended, along with general symptomatic and supportive measures. Hypotension and respiratory depression should be managed according to general principles.

Haemoperfusion and haemodialysis are not useful in benzodiazepine intoxication. The benzodiazepine antagonist flumazenil may be used in hospitalised patients for the reversal of acute benzodiazepine effects. Please consult the flumazenil product information prior to usage.

Contact the Poisons Information Centre on 13 11 26 (Australia) for advice on the management of overdosage.

## PRESENTATION AND STORAGE CONDITIONS

Alodorm 5mg : Nitrazepam 5 mg tablet: white, flat bevelled edged, marked NM/5 on one side, G on reverse

Available in HDPE bottles with PP child resistant screw caps (25's\*, 50's, 1000's) and PVC/PVDC/Al blister packs (30's, 1000's).

Store below 25°C.

\* Marketed in Australia.

## **NAME AND ADDRESS OF THE SPONSOR**

**Alphapharm Pty Limited**

Level 1, 30 The Bond

30-34 Hickson Road

Millers Point NSW 2000

ABN 93 002 359 739

[www.alphapharm.com.au](http://www.alphapharm.com.au)

## **POISON SCHEDULE OF THE MEDICINE**

S4 (Prescription Only Medicine)

## **DATE OF FIRST INCLUSION IN THE AUSTRALIAN REGISTER OF THERAPEUTIC GOODS (THE ARTG)**

14/11/1995

## **DATE OF MOST RECENT AMENDMENT**

05/09/2016

alodorm\_pi\05092016