

# DATA SHEET

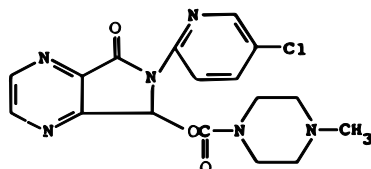
## IMOVANE TABLETS

### NAME OF THE MEDICINE

#### Non-proprietary Name

Zopiclone

#### Chemical structure



The chemical name for zopiclone is 6-(5-chloro-2-pyridyl)-6,7-dihydro-7-oxo-5H-pyrrolo[3,4-b]pyrazin-5-yl 4-methylpiperazine-1-carboxylate.

Molecular Formula : C<sub>17</sub>H<sub>17</sub>ClN<sub>6</sub>O<sub>3</sub>

Molecular Weight : 388.8

#### CAS Number

43200-80-2

### DESCRIPTION

Zopiclone is a fine white or slightly cream crystalline powder with a melting point of 176-178°C. It is practically insoluble in acetone, soluble in dimethyl formamide and 0.1N hydrochloric acid and freely soluble in chloroform and dichloromethane.

Imovane tablets contain 7.5 mg of the active ingredient zopiclone. The tablets also contain lactose, calcium hydrogen phosphate, wheat starch (gluten), sodium starch glycolate, magnesium stearate, hypromellose, macrogol 6000 and titanium dioxide.

### PHARMACOLOGY

#### Class

Zopiclone, a cyclopyrrolone derivative, is a short-acting hypnotic agent. Zopiclone belongs to a novel chemical class which is structurally unrelated to existing hypnotics. The pharmacological profile of zopiclone is similar to that of the benzodiazepines.

#### Site and Mode of Action

In sleep laboratory studies of 1 to 21-day duration in man, zopiclone reduced sleep latency, increased the duration of sleep and decreased the number of nocturnal awakenings. Zopiclone delayed the onset of REM sleep but did not reduce consistently the total duration of REM periods. The duration of stage 1 sleep was shortened, and the time spent in stage 2 sleep increased. In most studies, stage 3 and 4 sleep tended to be increased, but no change and actual decreases have also been observed. The effect of zopiclone on stage 3 and 4 sleep differs from that of the benzodiazepines which suppress slow wave sleep. The clinical significance of this finding is not known.

## **Pharmacokinetics**

### Absorption

Zopiclone is rapidly absorbed and distributed after oral administration, the time of maximum observed plasma concentration being about 1.75 hours.

### Distribution & Metabolism

A study of 16 healthy volunteers receiving a single dose of 7.5 mg of zopiclone intravenously demonstrated the apparent volume of distribution of zopiclone to be  $104 \pm 15.5L$ . Autoradiographic studies in the rat showed rapid distribution into the blood and peak tissue levels at 0.5 hours in the liver, small intestines, stomach, kidneys and the adrenals. After twenty four hours the total residual radioactivity in the body of the rat was 8%.

The bioavailability of the 7.5 mg tablets in man is  $76.3 \pm 9.6\%$ , a hepatic first pass effect has been demonstrated. In fresh human plasma, zopiclone is approximately 45% protein bound in the 25-100 ng/mL concentration range.

Zopiclone is extensively and rapidly metabolised by the liver. A large number of metabolites have been isolated and characterised, with the two major ones being the N-oxide, produced by oxidation of the piperazine nitrogen and the N-desmethyl produced by oxidative demethylation of the N-methyl piperazine. Only the N-oxide analogue has weak pharmacological activity.

### Elimination & Excretion

Zopiclone is rapidly eliminated, mainly by means of hepatic metabolism. The elimination half-life after a single oral dose is  $5.26 \pm 0.76$  hours. The elimination half-life for the N-oxide metabolite is  $4.44 \pm 0.66$  hours and that for the N-desmethyl metabolite is  $7.28 \pm 0.49$  hours.

Renal clearance is  $13.9 \pm 7.0$  mL/min which further shows that the major elimination pathway is by hepatic metabolism.

The amount of renal excretion is also low; unchanged zopiclone 3.6%, the N-oxide metabolites 11.4% and the N-desmethyl metabolite 13.4%.

### Elderly

In elderly patients, the absolute bioavailability is increased (94% vs 77% in young subjects), and the elimination half-life prolonged (approximately 7 hours).

### Renal Insufficiency

In patients with mild to moderate renal insufficiency, the pharmacokinetics of zopiclone are not altered. Haemodialysis does not appear to increase the plasma clearance of the drug.

### Hepatic Insufficiency

In patients with hepatic insufficiency, elimination half-life is prolonged (11.9) and time to peak plasma levels delayed (3.5 hours).

## **INDICATIONS**

Treatment of transient, short-term and chronic insomnia in adults including difficulties with falling asleep, nocturnal awakening and wakening.

## **CONTRAINDICATIONS**

Patients with known hypersensitivity to zopiclone or any of the excipients

Prior or concomitant use of alcohol

Myasthenia gravis

Severe impairments of respiratory function

Acute cerebrovascular accident.

Sleep apnoea syndrome

Severe hepatic insufficiency

Zopiclone is contraindicated in children

## **PRECAUTIONS**

Prolonged use of hypnotics is not recommended especially in the elderly.

### **Dependence**

Zopiclone should be prescribed for short periods only (2-4 weeks). Continuous long term use is not recommended. Use of sedative-hypnotic agents like zopiclone may lead to the development of physical and psychological dependence or abuse. It is therefore recommended that if physical dependence is suspected the dose should be decreased gradually and the patient advised about such a possibility (see 'ADVERSE EFFECTS').

Risks of dependence or abuse increase with:

- Dose and duration of treatment
- History of alcohol and/or drug abuse
- Use with alcohol or other psychotropics.

Once physical dependence has developed, abrupt termination of treatment will be accompanied by withdrawal symptoms (see 'ADVERSE EFFECTS').

### **Rebound insomnia**

A transient syndrome whereby the symptoms that led to treatment with sedative-hypnotic agents recur in an enhanced form, may occur on withdrawal of hypnotic treatment. It may be accompanied by other reactions including mood changes, anxiety and restlessness. Since the risk of such phenomena is greater after abrupt discontinuation of zopiclone, especially in patients with physical dependence, it is therefore recommended to decrease the dosage gradually and to advise the patient accordingly (see 'ADVERSE EFFECTS').

### **Amnesia**

Anterograde amnesia may occur, specially when sleep is interrupted or when retiring to bed is delayed after the intake of the tablet.

To reduce the possibility of anterograde amnesia, patients should ensure that:

- they take the tablet strictly when retiring for the night
- they are able to have a full night sleep.

### **Other Psychiatric and Paradoxical Reactions**

Other psychiatric and paradoxical reactions have been reported (see 'ADVERSE EFFECTS') like restlessness, agitation, irritability, aggression, delusion, anger, nightmares, hallucinations, inappropriate behaviour and other adverse behavioural effects are known to occur when using sedative/hypnotic agents like zopiclone. Should this occur, use of zopiclone should be discontinued. These reactions are more likely to occur in the elderly.

### **Depression, Psychosis and Schizophrenia**

As with other hypnotics, zopiclone does not constitute a treatment of depression and may even mask its symptoms. Caution should be exercised if zopiclone is prescribed to depressed patients, including those with latent depression, particularly when suicidal tendencies may be present and protective measures may be required. Patients should be closely monitored for any signs or symptoms of psychiatric disorders. Patients should be advised to go to the emergency department at their nearest hospital if they notice they are becoming depressed, have suicidal thoughts or are experiencing a change in their behaviour. Patients may wish to consider asking a family member or close friend to help them stay alert to signs of depression or behavioural changes.

### **Somnambulism and Associated Behaviours**

Sleep walking and other associated behaviours such as 'sleep driving', preparing and eating food, or making phone calls, with amnesia for the event, have been reported in patients who have taken zopiclone and were not fully awake. The use of alcohol and other CNS-depressants with zopiclone

appears to increase the risk of such behaviours, as does the use of zopiclone at doses exceeding the maximum recommended dose. Discontinuation of zopiclone would be strongly considered for patients who report such behaviours (see 'Interactions: Alcohol' and 'ADVERSE EFFECTS').

### **Epilepsy**

Patients with a history of seizures should not be abruptly withdrawn from any CNS depressant drug, including zopiclone.

### **Severe Anaphylactic and Anaphylactoid Reactions**

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, including zopiclone. Some patients have had additional symptoms such as dyspnoea, throat closing, or nausea and vomiting that suggest anaphylaxis. Some patients have required medical therapy in the emergency department. If angioedema involves the tongue, glottis or larynx, airway obstruction may occur and be fatal. Patients who develop angioedema after treatment with zopiclone should not be rechallenged with the drug.

### **Hepatic Insufficiency**

In patients with severe hepatic insufficiency (serum albumin less than 30 g/l or presence of gross oedema), the elimination of zopiclone may be significantly reduced. Treatment should be initiated on a dose of 3.75mg and if necessary, may be increased to 7.5mg.

### **Renal Insufficiency**

Zopiclone is removed by dialysis.

### **Respiratory Insufficiency**

Caution should be exercised in treating patients with chronic respiratory insufficiency. Treatment should be initiated on a dose of 3.75mg and if necessary, should be carried out at 7.5mg.

### **Hormonal Systems**

Treatment of rats with zopiclone increases hepatic thyroid hormone metabolism of T4, resulting in increases in TSH and T3 levels, and decreases in T4 levels. It is suggested that zopiclone not be administered to individuals with impaired thyroid hormone homeostatic mechanisms or with conditions linked to hormonal imbalances.

### **Effects on Ability to Drive and use Machinery**

As with all patients taking CNS depressant medications, patients receiving zopiclone should be warned not to operate dangerous machinery or motor vehicles until it is known that they do not become drowsy after zopiclone therapy. Abilities may be impaired on the day following use. It has been reported that the risk that zopiclone adversely affects driving ability is increased by concomitant intake of alcohol. Therefore, driving is not recommended after the concomitant intake of zopiclone and alcohol.

### **Abuse**

Caution must be exercised in administering zopiclone to individuals known to be addiction prone or those whose history suggests they may increase the dosage on their own initiative.

### **Geriatric or Debilitated Patients**

Such patients may be particularly susceptible to the sedative effects of zopiclone and associated giddiness, ataxia and confusion, which may increase the possibility of a fall. (See 'DOSAGE AND ADMINISTRATION').

### **Use in Children**

The safe and effective dose of zopiclone in children and adolescents under 18 years of age has not been established (see 'CONTRAINDICATIONS').

## **Effects on Fertility**

Zopiclone has been shown to severely reduce fertility in male rats treated with 50 mg/kg/day or greater. The significance of this finding for humans is not known.

## **Pregnancy**

### Category C

Insufficient data are available on zopiclone to assess its safety during human pregnancy and lactation, therefore the use of zopiclone during pregnancy is not recommended. Studies in animals have not shown evidence of an increased occurrence of foetal damage. However, zopiclone has been shown to cross the placenta, and increase postnatal mortality in rats given 10 mg/kg/d and above. Although the significance of this for humans is not known, it is likely that zopiclone may be harmful to the neonate.

Treatment should be as short as possible and should not exceed four weeks including the period of tapering off. Moreover, infants born to mothers who took sedative/hypnotics agents chronically during the latter stages of pregnancy may have developed physical dependence and may be at some risk for developing withdrawal symptoms in the postnatal period.

If zopiclone is prescribed to a woman of childbearing potential, she should be warned to contact her physician regarding discontinuation of the product if she intends to become or suspects that she is pregnant.

Moreover, if zopiclone is used during the last three months of pregnancy or during labour, due to the pharmacological action of the product, effects on the neonate, such as hypothermia, hypertonia and respiratory depression can be expected.

## **Lactation**

Zopiclone and/or its metabolites are excreted in breast milk so therefore use in nursing mothers is not recommended.

## **Carcinogenicity**

Treatment with zopiclone by dietary administration for 2 years increased the incidence of thyroid carcinomas in male rats dosed with 100 mg/kg/day, and increased the incidence of mammary carcinoma in female rats dosed with 100 mg/kg/day, probably due to interference with thyroid hormone and 17 $\beta$ -estradiol metabolism. Studies with mice treated with zopiclone at dietary doses up to 100 mg/kg/day showed no evidence of drug-related carcinogenicity.

## **Genotoxicity**

Genotoxicity studies, using a standard battery of tests, showed no evidence of gene mutations or chromosomal damage.

## **Interactions with other medicines**

### Alcohol

Concomitant intake with alcohol is not recommended. The sedative effect of zopiclone may be enhanced when the product is used in combination with alcohol.

### CNS Depressants

Additive CNS depressant effects should be expected if zopiclone is administered concomitantly with other medications which themselves produce CNS depression, for example, barbiturates, benzodiazepines, alcohol, sedatives, tricyclic antidepressants, non-selective MAO inhibitors, phenothiazines and other antipsychotics, skeletal muscle relaxants, antihistamines, narcotic analgesics, anaesthetics, neuroleptics, anxiolytics, antiepileptics (see 'PRECAUTIONS'). In the case of narcotic analgesics, enhancement of euphoria may also occur leading to an increase in psychic dependence.

### Other

Erythromycin has been reported to increase significantly zopiclone concentrations at 0.5 and 1 hour after ingestion of zopiclone. The total AUC of zopiclone increased by 80% in 10 healthy

volunteers. Accelerated absorption of zopiclone in the presence of erythromycin may lead to faster hypnotic effects.

Plasma levels of zopiclone may be increased when co-administered with CYP3A4 inhibitors such as erythromycin, clarithromycin, ketoconazole, itraconazole, and ritonavir.

Plasma levels of zopiclone may be decreased when co-administered with CYP3A4 inducers, such as rifampicin, carbamazepine, phenobarbital, phenytoin, and St. John's wort.

### **Effects on ability to drive and use machines**

Because of its pharmacological properties, zopiclone may adversely affect the ability to drive or to use machines. The risk is increased by concomitant intake of alcohol.

## **ADVERSE EFFECTS**

The side-effects most commonly seen in clinical trials is taste alteration (bitter taste).

### **More Common Reactions**

*Gastrointestinal:* bitter taste, dry mouth

*Nervous System:* drowsiness, headaches, fatigue

### **Less Common Reactions**

*Gastrointestinal:* heartburn, constipation, diarrhoea, nausea, coated tongue, bad breath, anorexia or increased appetite, vomiting, epigastric pains, dyspepsia.

*Cardiovascular:* palpitations in elderly patients.

*Skin:* urticaria, tingling.

*Reproductive:* impotence, ejaculation failure, libido disorder.

*Nervous system:* agitation, anxiety, loss of memory including retrograde amnesia, anterograde amnesia, confusion, dizziness, weakness, somnolence, asthenia, feeling of drunkenness, euphoria, depression, co-ordination abnormality, hypotonia, speech disorder, hallucinations (auditory and visual), behavioural disorders, aggression, tremor, rebound insomnia, muscle pain, nightmares, irritability, inappropriate behaviour possibly associated with amnesia, sleep walking (see 'PRECAUTIONS – Somnambulism and associated behaviours'), restlessness, delusion, anger, dependence, ataxia .

Withdrawal syndrome has been reported upon discontinuation (see 'PRECAUTIONS'). Withdrawal symptoms vary and may include rebound insomnia, anxiety, tremor, sweating, agitation, confusion, headache, palpitations, tachycardia, delirium, nightmares, hallucinations, and irritability. In severe cases the following symptoms may occur: derealisation, depersonalisation, hyperacusis, numbness and tingling of the extremities, hypersensitivity to light, noise and physical contact, hallucinations. In very rare cases, seizures may occur.

*Allergic or cutaneous:* pruritus, rash. Angioedema and/or anaphylactic reactions have been reported very rarely.

*Miscellaneous:* blurred vision, micturition, mild to moderate increases in serum transaminases and/or alkaline phosphatase have been reported very rarely. Falls, predominantly in elderly patients, diplopia and muscular weakness have been reported.

## **DOSAGE AND ADMINISTRATION**

### **Adults**

7.5 mg by oral administration shortly before retiring for a maximum of 2-4 weeks. This dose should not be exceeded. Depending on clinical response, the dose may be lowered to 3.75 mg.

Zopiclone is not recommended for long term use (i.e. periods of more than 4 weeks). If physical dependence is suspected treatment should be withdrawn gradually. (See PRECAUTIONS')

## **Elderly Patients**

In the elderly and/or debilitated patient an initial dose of 3.75 mg is recommended. The dose may be increased to a maximum of 7.5 mg if the starting dose does not offer adequate therapeutic effect, but in clinical trials, 25% of elderly patients treated with zopiclone experienced CNS side-effects at the higher dose. Zopiclone should be used with caution in these patients. (See also 'PRECAUTIONS').

## **Paediatric**

Zopiclone is contraindicated in children. Dosage has not been established.

## **Hepatic Insufficiency**

The recommended dose is 3.75 mg depending on acceptability and efficacy. Up to 7.5 mg may be used with caution in appropriate cases.

## **Renal insufficiency:**

Although no accumulation of zopiclone or of its metabolites has been detected in cases of renal insufficiency, it is recommended that patients with impaired renal function should start treatment with 3.75 mg.

Treatment should be as short as possible and should not exceed four weeks including the period of tapering off. Extension beyond the maximum treatment period should not take place without re-evaluation of the patient's status. The product should be taken just before retiring for the night.

## **Treatment Duration**

- Transient insomnia: 2 to 5 days.
- Short term insomnia: 2 to 3 weeks.
- Chronic insomnia: long term treatment should be considered only after a consultation with a specialist.

## **Alternative Therapy**

For long term treatment of insomnia, alternative non-pharmacological methods should be considered. Effective practical management of insomnia must respond to the presenting characteristics of the complaint. Giving accurate information is a form of treatment; there is benefit in discussing some simple facts with the patient and relating them to the problem, thereby assisting the patient to place the sleep problem in its context. Sleep hygiene such as reduction of caffeine intake, should be exercised. Programmes designed to establish an optimal sleeping pattern for the patient may also be useful as are relaxation techniques designed to assist the patient deal with tension and intrusive thoughts in bed.

## **OVERDOSAGE**

Overdose of zopiclone can be manifested by varying degrees of CNS depression ranging from drowsiness to coma according to the quantity ingested. In mild cases, symptoms include drowsiness, confusion, and lethargy. In more severe cases, symptoms may include ataxia, hypotonia, hypotension, methaemoglobinaemia, respiratory depression and coma. Overdosage could be life-threatening when combined with other CNS depressants, including alcohol. Other risk factors, such as the presence of concomitant illness and the debilitated state of the patient, may contribute to the severity of symptoms and very rarely can result in fatal outcome.

## **Treatment**

Symptomatic and supportive treatment in adequate clinical environment is recommended, attention should be paid to respiratory and cardiovascular functions. Activated charcoal is only useful when performed soon after ingestion. Haemodialysis is of no value due to the large volume of distribution of zopiclone. Flumazenil may be useful as an antidote. As in the management of overdose with any medication, it should be borne in mind that multiple agents may have been taken.

Contact the Poisons Information Centre for advice on management of overdose.

**PRESENTATION AND STORAGE CONDITIONS**

Imovane tablets containing 7.5 mg of zopiclone and are available in packs of 10 and 30\* tablets. The tablets are scored white or almost white, elliptical, biconvex, film coated tablets.

Store below 25°C.

**MEDICINE CLASSIFICATION**

Prescription Medicine

**NAME AND ADDRESS OF THE SPONSOR**

sanofi-aventis new zealand limited  
Level 8, James and Wells Tower  
56 Cawley Street  
Ellerslie  
Auckland  
New Zealand

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31 May 2011

\*Marketed Pack Size.