NEW ZEALAND DATA SHEET

METHATABS
Methadone Hydrochloride BP 5mg Tablets

PRESENTATION

Methatabs are white 7 mm normal convex tablets.

USES

Actions
Methadone hydrochloride is a synthetic opioid analgesic. Methadone is a racemic mixture and levo-methadone is the active isomer. The pharmacological actions of Methadone are qualitatively similar to those of morphine. Significant quantitative differences are its effective analgesic activity after administration by the oral route and its tendency to show persistent effects with repeated administration.

Pharmacokinetics
Methadone hydrochloride is readily absorbed after administration by mouth and has high oral bioavailability. Peak plasma concentrations have been reported 1 to 5 hours after oral administration of a single dose in tablet form. It undergoes considerable tissue distribution, and protein binding is reported to be 60 to 90% with oc-acid glycoprotein being the main binding protein in plasma. Metabolism to the major metabolite 2-ethylidine-1,5-dimethyl-3,3-diphenyl-5 –methyppyrrolidine, both of them inactive, occurs in the liver. The metabolites are excreted in the faeces and urine together with unchanged Methadone. Other metabolites, including methanol and nor-methadol (reported to be pharmacologically active), have also been described, but account for a small proportion of the dose. The liver may also serve as a major storage site of unchanged Methadone which is taken up, bound non-specifically by the liver and released again mainly unchanged. Marked inter individual variation in kinetics have been observed with Methadone. Elimination half-lives vary considerably (a range of 15-to 60 hours has been reported) and careful adjustment of dosage is necessary with repeated administration. Plasma concentrations have been found to vary widely during Methadone maintenance therapy with large differences between patients and wide fluctuations in individual patients. Declining concentrations have been reported during Methadone maintenance suggesting that tolerance occurs, possibly as a result of auto-induction of hepatic microsomal enzymes.
INDICATIONS

Methatabs is indicated for:

The treatment of severe pain
Methadone is indicated for relief of severe pain. Methadone is sometimes used as an antitussive when severe pain is present and coughing cannot be relieved by other means.
Methadone is not recommended for obstetric analgesia because its long duration of action increases the risk of neonatal respiratory depression.

The treatment of dependence on opioid drugs
Methadone is indicated as a suppressant to permit detoxification. Oral Methadone is also indicated as maintenance therapy to discourage addicts from returning to illicit use of other opioid drugs.

DOSAGE AND ADMINISTRATION

Treatment of severe pain
Starting oral doses of Methadone may range from 5 to 10mg (1 to 2 tablets) given every 6 to 8 hours or longer and thereafter adjusted as necessary.

Treatment of dependence on opioid drugs
A dose of 10 to 20mg (2 to 4 tablets) by mouth may be given initially and increased as necessary by 5 to 10mg daily. The dose must not be increased by more than 5 to 10mg daily, and by no more than 30mg in any 7-day period. After stabilisation, which can often be achieved with a dose of 30 to 50mg daily (up to a maximum of 80mg daily), the dose of Methadone is gradually decreased until total withdrawal is achieved. Some treatment schedules for opioid dependence involved prolonged maintenance therapy with Methadone where the daily dose is adjusted carefully for the individual.

CONTRAINDICATIONS

Methadone is contraindicated in individuals who are hypersensitive to Methadone or other components in Methadone Tablets:
Like other opioids, Methadone is contraindicated in patients with respiratory depression, especially in the presence of cyanosis and excessive bronchial secretions.
Methadone should not be given during an attack of bronchial asthma.
Methadone is contraindicated in the presence of acute alcoholism, head injury and raised intracranial pressure.
Methadone is contraindicated in individuals receiving monoamine oxidase inhibitors or within 14 days of stopping such treatment (see Interactions).
As with other opioids, Methadone is contraindicated in patients with ulcerative colitis, since it may precipitate toxic dilation or spasm of the colon. As with all narcotics, Methadone should not be administered to patients with severe hepatic impairment as it may precipitate hepatic encephalopathy (see Warnings and Precautions) Methadone is contraindicated in biliary and renal tract spasm.

**WARNINGS AND PRECAUTIONS**

**Cardiac Conduction Effects:**
Laboratory studies, both in vivo and in vitro, have demonstrated that Methadone inhibits cardiac potassium channels and prolongs the QT interval. Cases of QT interval prolongation and serious arrhythmia (torsades de pointes) have been observed during treatment with Methadone. These cases appear to be more commonly associated with, but not limited to, higher dose treatment (> 100 mg/day). Most cases involve patients being treated for pain with large, multiple daily doses of Methadone although cases have been reported in patients receiving doses commonly used for maintenance of opioid addiction.

Methadone should be administered with particular caution to patients already at risk for development of prolonged QT interval. These risks include cardiac hypertrophy, history of cardiac conduction abnormalities, advanced heart disease or ischaemic heart disease, liver disease, family history of sudden death, hypokalaemia, hypomagnesaemia, concomitant treatments with medicines that have a potential for QT prolongation, concomitant treatment with medicines which may cause electrolyte abnormalities (e.g. diuretics) and concomitant treatment with CYP3A4 inhibitors.

QT prolongation has also been reported in patients with no prior cardiac history who have received high doses of Methadone. Patients developing QT prolongation while on Methadone treatment should be evaluated for the presence of modifiable risk factors, such as concomitant medications with cardiac effects, drugs which might cause electrolyte abnormalities, and drugs which might act as inhibitors of Methadone metabolism.

In patients with recognised risk factors of QT prolongation, or in case of concomitant treatment with medicines that have a potential for QT prolongation, ECG monitoring is recommended prior to methadone treatment, at dose stabilisation, after dose increases, or after starting any potentially interacting medicine. In patients without recognised risk factors for QT prolongation, ECG monitoring is recommended before dose titration above 100mg/day, and at seven days after titration.

For use of Methadone to treat pain, the risk of QT prolongation and development of dysrhythmias should be weighted against the benefit of adequate pain management and the availability of alternative therapies.
Mutagenicity:
Methadone did not exhibit demonstrable mutagenic activity in a wide range of standard in vitro and in vivo mutagenicity assays. However, in a Dominant Lethal assay in mice, treatment with Methadone at doses of 1 to 6 mg/kg was associated with increased pre-implantation deaths and chromosomal aberrations of sperm cells, when compared with controls.

Carcinogenicity:
Long term carcinogenicity tests in rodents did not reveal any evidence of Methadone-related neoplasia.

Teratogenicity:
No teratogenic effects have been observed in standard teratogenicity studies in rats and rabbits given Methadone at doses from 10 to 50 times the average daily human maintenance dose. Developmental abnormalities of the central nervous system have been reported in hamsters and mice given high doses in early pregnancy.

Fertility:
Methadone does not appear to impair human female fertility. Studies in men on Methadone maintenance programmes have shown that Methadone reduces serum testosterone and markedly depresses the ejaculate volume and sperm motility. The sperm counts of Methadone subjects were twice that of controls, reflecting the lack of dilution through reduced seminal secretions.

Use in Pregnancy and Lactation:
There is inadequate evidence of the safety of Methadone in human pregnancy although it has been in selected use for many years without apparent ill consequence. Autopsies on five infants who died in utero did not reveal any abnormality attributable to Methadone use by their dependent mothers. Nevertheless, the use of methadone in pregnancy should be avoided unless there is no safer alternative. Narcotics may cause respiratory depression in the newborn infant. During the last 2 to 3 hours before expected delivery, narcotics should therefore only be used after weighing the needs of the mother against the risk to the fetus. Breast feeding is permissible in mothers receiving Methadone for maintenance therapy but the baby should be monitored to avoid sedation. Withdrawal symptoms can occur in the infant. Assays of breast milk from Methadone-maintained mothers showed Methadone concentrations of 0.17 to 5.6 mcg/ml.

Use in Children:
Methadone is not recommended for use in children less than 18 years of age since documented clinical experience has been insufficient to establish a suitable dosage regimen; furthermore, children are particularly sensitive to the respiratory and central nervous system effects of Methadone.
Use in the Elderly:
Methadone has a long plasma half life which may lead to accumulation, particularly if renal function is impaired (see Renal Impairment). In common with other opioids, Methadone may cause confusion in this age group, therefore careful monitoring is advised.

Hepatic Impairment
Particular care should be taken when Methadone is to be used in patients with hepatic impairment as these patients metabolise Methadone more slowly than normal patients. Where not contraindicated, Methadone should be given at less than the normal recommended dose and the patient's response used as a guide to further dosage requirements (see Contraindications).

Renal Impairment
Methadone should be used with caution in patients with renal dysfunction.

ADVERSE EFFECTS

The most frequently observed adverse reactions include lightheadedness, dizziness, sedation, nausea, vomiting, and sweating. These effects seem to be more prominent in ambulatory patients and in those who are not suffering severe pain. In such individuals, lower doses are advisable.

The major hazards of methadone are respiratory depression and, to a lesser degree, systemic hypotension. Respiratory arrest, shock, cardiac arrest, and death have occurred.

Other adverse reactions include the following:

Body as a whole: weakness, oedema, headache

Cardiovascular: arrhythmias, bigeminal rhythms, bradycardia, cardiomyopathy, ECG abnormalities, extrasystoles, flushing, heart failure, hypotension, palpitations, phlebitis, QT interval prolongation, syncope, T-wave inversion, tachycardia, torsade de pointes, ventricular fibrillation, ventricular tachycardia

Endocrine: hypogonadism

Gastrointestinal: abdominal pain, anorexia, biliary tract spasm, constipation, dry mouth, glossitis

Hematologic: reversible thrombocytopenia has described in opioid addicts with chronic hepatitis

Metabolic: hypokalaemia, hypomagnesaemia, weight gain

Musculoskeletal: decreased muscle mass and strength, osteoporosis and fractures
Nervous system disorders: raised intracranial pressure, sedation

Psychiatric: agitation, changes of mood, dependence, disorientation, dysphoria, euphoria, hallucinations, insomnia

Renal: antidiuretic effect, urinary retention or hesitancy

Reproductive: amenorrhoea, reduced libido and/or potency, reduced ejaculate volume, reduced seminal vesicle and prostate secretions, decreased sperm motility, abnormalities in sperm morphology

Respiratory: pulmonary oedema, respiratory depression

Skin and subcutaneous tissue: pruritus, urticaria, other skin rashes, and rarely, haemorrhagic urticaria

Maintenance on a stabilised dose: during prolonged administration of methadone, as in a methadone maintenance programme, constipation and sweating often persist and hypogonadism, decreased serum testosterone and reproductive effects are thought to be related to chronic opioid use.

INTERACTIONS

The medicines listed below are known to affect methadone metabolism and should therefore be used with caution by those being treated with methadone.

NOTE: Patients with hepatitis C may have impaired liver function. This needs to be taken into account when the use of medicines metabolised by the liver is considered. The dose of paracetamol, for example, needs to be well within the standard 4 g per day.
<table>
<thead>
<tr>
<th>Drug</th>
<th>Status of effect</th>
<th>Interaction</th>
<th>Mechanism</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol</td>
<td>Clinically important.</td>
<td>Increased sedation, increased respiratory depression; combination may also have increased hepatotoxic potential.</td>
<td>Additive central nervous system depression.</td>
</tr>
<tr>
<td>Benzodiazepines</td>
<td>Clinically important.</td>
<td>Enhanced sedative effect.</td>
<td>Additive CNS depression.</td>
</tr>
<tr>
<td>Buprenorphine</td>
<td>Clinically important.</td>
<td>Antagonistic effect or enhanced sedative and respiratory depression.</td>
<td>Partial agonist of opiate receptors.</td>
</tr>
<tr>
<td>Carbamazepine</td>
<td>Clinically important.</td>
<td>Reduced methadone levels.</td>
<td>Stimulates hepatic enzymes involved in methadone metabolism.</td>
</tr>
<tr>
<td>Chlormethiazole</td>
<td>Clinically important.</td>
<td>Enhanced sedative effect.</td>
<td>Additive CNS depression.</td>
</tr>
<tr>
<td>Cimetidine</td>
<td>Two cases have been shown in patients taking methadone as analgesia.</td>
<td>Possible increase in methadone plasma levels.</td>
<td>Inhibits hepatic enzymes involved in methadone metabolism.</td>
</tr>
<tr>
<td>Cisapride, domperidone, metoclopromide</td>
<td>Theoretical.</td>
<td>Theoretically might increase the speed of onset of methadone absorption, but not the extent.</td>
<td>Possibly by reversing the delayed gastric emptying associated with opioids.</td>
</tr>
<tr>
<td>Cyclizine and other sedating antihistamines</td>
<td>Clinically important.</td>
<td>Anecdotal reports of injection of cyclizine with opioids causing hallucinations.</td>
<td>Additive psychoactive effects; anti-muscarinic effects at high doses.</td>
</tr>
<tr>
<td>Desipramine</td>
<td>Clinically important.</td>
<td>Raised desipramine levels by up to a factor of two.</td>
<td>Unknown interaction not seen with other tricyclic antidepressants.</td>
</tr>
<tr>
<td>Other tricyclic antidepressants</td>
<td>Theoretical.</td>
<td>Enhanced sedative effect, which is dependent.</td>
<td>Additive CNS dose depression.</td>
</tr>
<tr>
<td>Erythromycin</td>
<td>In theory should interact but combination has not been studied.</td>
<td>Increase in methadone levels.</td>
<td>Decreased methadone metabolism.</td>
</tr>
<tr>
<td>Fluconazole</td>
<td>In theory the same as ketoconazole.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fluoxetine</td>
<td>Clinically important.</td>
<td>Raised methadone levels but not as significant as for fluvoxamine.</td>
<td>Decreased methadone metabolism.</td>
</tr>
<tr>
<td>Fluvoxamine, other SSRI</td>
<td>Clinically important, theoretical.</td>
<td>Raised plasma methadone levels.</td>
<td>Decreased methadone metabolism.</td>
</tr>
<tr>
<td>Grapefruit juice</td>
<td>Should interact in theory and there have been several anecdotal reports.</td>
<td>Raised methadone levels.</td>
<td>Decreased methadone metabolism.</td>
</tr>
<tr>
<td>Indinavir</td>
<td>Clinically important.</td>
<td>Raised methadone levels.</td>
<td>Decreased methadone metabolism.</td>
</tr>
<tr>
<td>Drug</td>
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<tr>
<td>MAOI (including seleagine and modobemide)</td>
<td>Severe with pethidine though unlikely with methadone and has never been described.</td>
<td>CNS excitation delirium, hyperpyrexia, convulsions hypotension or respiratory depression.</td>
<td>Unclear; avoid the combination if possible.</td>
</tr>
<tr>
<td>Naloxone</td>
<td>Clinically important.</td>
<td>Blocks effect of methadone (long acting), but may be needed if overdose suspected.</td>
<td>Opioid agonist – competes for opiate receptors.</td>
</tr>
<tr>
<td>Nevirapine</td>
<td>Clinically important.</td>
<td>Decreased methadone levels.</td>
<td>Increased methadone metabolism.</td>
</tr>
<tr>
<td>Nifedipine</td>
<td>Has been demonstrated in vitro only.</td>
<td>Increased nifedipine levels; no effect on methadone levels.</td>
<td>Methadone decreases the metabolism of nifedipine.</td>
</tr>
<tr>
<td>Omeprazole</td>
<td>To date, demonstrated only in animals.</td>
<td>Increased methadone levels.</td>
<td>Possibly affects methadone absorption form the gut.</td>
</tr>
<tr>
<td>Phenobarbitone</td>
<td>Clinically important.</td>
<td>Reduced methadone levels; increased sedation additive CNS depression.</td>
<td>Barbiturates stimulate hepatic enzymes involved in methadone metabolism.</td>
</tr>
<tr>
<td>Phenytoin</td>
<td>Clinically important.</td>
<td>Reduced methadone levels</td>
<td>Phenytoin stimulates hepatic enzymes involved in methadone metabolism.</td>
</tr>
<tr>
<td>Rifampicin</td>
<td>Very important: most patients are likely to be affected.</td>
<td>Reduced methadone levels.</td>
<td>Rifampicin stimulates hepatic enzymes involved in methadone metabolism.</td>
</tr>
<tr>
<td>Rifabutin</td>
<td>Occasionally clinically important.</td>
<td>Decreased methadone levels.</td>
<td>Increased methadone metabolism.</td>
</tr>
<tr>
<td>Ritonavir</td>
<td>Clinically important.</td>
<td>Ritonavir may increase plasma methadone levels.</td>
<td>Inhibits methadone metabolism.</td>
</tr>
<tr>
<td>Other protease inhibitors</td>
<td>Theoretical.</td>
<td>May raise or lower plasma methadone levels.</td>
<td>Inhibits methadone metabolism.</td>
</tr>
<tr>
<td>Urine acidifiers (e.g. ascorbic acid / vitamin C)</td>
<td>Clinically important.</td>
<td>Reduced plasma methadone levels.</td>
<td>Raised urinary excretion of methadone.</td>
</tr>
<tr>
<td>Urine alkalinisers (e.g. sodium bicarbonate)</td>
<td>Clinically important.</td>
<td>Increased plasma methadone levels.</td>
<td>Reduced urinary excretion of methadone.</td>
</tr>
<tr>
<td>Zidovudine</td>
<td>Clinically important.</td>
<td>Raised plasma levels of zidovudine; no effect on methadone levels.</td>
<td>Unknown.</td>
</tr>
<tr>
<td>Zopiclone</td>
<td>Clinically important.</td>
<td>Enhanced sedative effects.</td>
<td>Additive CNS depression.</td>
</tr>
<tr>
<td>Other opioids</td>
<td>May be clinically important.</td>
<td>Enhanced sedative effect.</td>
<td>Additive CNS depression; enhanced respiratory depression.</td>
</tr>
<tr>
<td>Other CNS depressant medicines (e.g. neuroleptics, hyoscine)</td>
<td>Clinically important.</td>
<td>Enhanced sedative effects, which are dose dependent.</td>
<td>Additive CNS depression.</td>
</tr>
</tbody>
</table>
OVERDOSAGE

Signs and Symptoms:
The symptoms and signs of overdosage with Methadone parallel those for other opioids, namely profound respiratory depression, pin-point pupils, hypotension, circulatory failure and pulmonary oedema and coma. Mydriasis may replace miosis as asphyxia intervenes. Drowsiness, floppiness, pin-point pupils and apnoea have been reported in children.

Treatment:
General supportive measures should be employed as required. The specific opioid antagonist naloxone is the treatment of choice for the reversal of coma and the restoration of spontaneous respiration. A dose of 0.4 to 2mg is given by intravenous injection repeated at intervals of 2 to 3 minutes if necessary, up to 10mg. Naloxone may also be given by subcutaneous or intramuscular injection or intravenous infusion. Patients should be monitored closely for at least 48 hours after apparent recovery in case of relapse, since the duration of action of the antagonist may be substantially shorter than that of Methadone. The use of other respiratory or central stimulants is not recommended. Acidification of the urine will enhance urinary excretion of Methadone. Methadone is not dialysable by either peritoneal dialysis or haemodialysis.

PHARMACEUTICAL PRECAUTIONS

Store below 25°C
Shelf life is 60 months from date of manufacture.

MEDICINE CLASSIFICATION

Controlled Drug B3.

PACKAGE QUANTITIES

Pack of 10 tablets in glass bottles.
FURTHER INFORMATION

The tablets also contain:
Magnesium stearate
Lactose monohydrate
Maize starch

NAME AND ADDRESS

PSM Healthcare Ltd t/a API Consumer Brands Ltd
PO Box 76 401
Manukau
Auckland 2241
Phone 0508 776746

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