AUSTRALIAN PRODUCT INFORMATION – METOPIRONE® (METYRAPHONE) SOFT CAPSULE

1. NAME OF THE MEDICINE

Metyrapone

2. QUALITATIVE AND QUANTITATIVE COMPOSITION

Metopirone is supplied as soft gelatin capsules each containing 250 mg of metyrapone.
Excipients with known effects: Sodium ethyl hydroxybenzoate, sodium propyl hydroxybenzoate
For the full list of excipients, see Section 6.1 List of excipients.

3. PHARMACEUTICAL FORM

Metopirone capsules 250 mg are white to yellowish white oblong soft gelatin capsules marked HRA on one side in red ink.

4. CLINICAL PARTICULARS

4.1 Therapeutic indications

Diagnostic Use

- For the diagnosis of latent ACTH deficiency such as in cases of known pituitary dysfunction or of a suspected pituitary tumour, as well as before and after surgical intervention in the region of the pituitary; and, to assess the degree of ACTH suppression during or after glucocorticoid therapy.
- For the differential diagnosis of states of adrenocortical hyperfunction in Cushing's Syndrome.

4.2 Dose and method of administration

Diagnostic Agent

Short single dose test (which can be carried out in ambulant patients) for the diagnosis of latent ACTH deficiency:

In the short single-dose test, 11-desoxycortisol (Compound S) and/or ACTH are determined in the plasma following a single dose of Metopirone. At around midnight, the patient is given 1 to 2 g of Metopirone (30 mg/kg - adults or children) together with yogurt or milk. Eight hours later, a sample of whole venous blood is taken, centrifuged at 4°C and the plasma deep frozen at -20°C, immediately. Afterwards a prophylactic dose of 50 mg cortisone acetate should be administered.

Assessment:

The accepted normal values employed will depend on the method used for assaying ACTH and 11-desoxycortisol and may vary in different laboratories. A rise in plasma ACTH to at least 44 pmol/litre (200 ng/litre), or in 11-desoxycortisol to over 0.2 µmol/litre (70 µg/litre), usually indicates a normal ACTH reserve.

Patients in whom adrenocortical insufficiency is suspected, and who cannot be adequately supervised at home, should be hospitalised for the night as a precautionary measure.
Multiple dose test (which can only be carried out in hospital) for the diagnosis of latent ACTH deficiency and the differential diagnosis of states of adrenocortical hyperfunction in Cushing’s Syndrome:

The urinary excretion of steroids is measured. After control values have first been obtained for the 24 hours preceding the Metopirone test, 500 to 750 mg Metopirone is administered every 4 hours for 24 hours, to a total of 3.0 to 4.5g. It is recommended that the capsules be taken together with milk or after a meal. All urine passed in the following 24 hours is collected and stored at -10°C until analysis is done. The effect on the urinary steroid values can be expected to reach its maximum within this 24 hour period.

Assessment:

ACTH deficiency: When the anterior pituitary is functioning normally Metopirone causes a pronounced increase (to double or more) in the urinary excretion of 11-desoxycortisol and other 11-desoxycorticosteroids. The absence of such an increase indicates secondary adrenocortical insufficiency.

Cushing’s syndrome: If the urinary excretion of 11-desoxycorticosteroids increases in response to Metopirone, this indicates that excessive production of ACTH has led to adrenocortical hyperplasia (Cushing's disease). Such an increase can be taken as a sign that an autonomous cortisol-producing adrenocortical tumour is not present.

4.3 Contraindications

- Adrenocortical insufficiency.
- Hypersensitivity to metyrapone or to any of the excipients.

4.4 Special warnings and precautions for use

Since the Metopirone test yields satisfactory results only if the adrenal cortex is still capable of responding normally to ACTH, it may be advisable to ascertain responsiveness to exogenous ACTH administration before a diagnostic test with Metopirone is undertaken because Metopirone may induce acute adrenal insufficiency in patients with reduced adrenal secretory capacity as well as in patients with gross hypopituitarism.

Long-term treatment with Metopirone can cause hypertension due to excessive secretion of desoxycorticosterone.

In cases where adrenocortical or anterior pituitary function is more severely impaired, Metopirone may provoke transient adrenocortical insufficiency. This can be rapidly overcome by administering a corticosteroid.

In cases of thyroid hypofunction, the urinary steroid excretion may rise only sluggishly or not at all, in response to Metopirone.

Patients with ectopic Cushing’s syndrome are at risk for opportunistic infections such as Pneumocystis Jiroveci pneumonia during Metopirone treatment.

Use in hepatic impairment

Patients with liver cirrhosis often show a delayed response to Metopirone, because the liver damage results in a slower breakdown of cortisol.

Use in the elderly

No data available

Paediatric use

No data available

Effects on laboratory tests

No data available

4.5 Interactions with other medicines and other forms of interactions

Before performing the Metopirone tests, drugs influencing pituitary or adrenocortical function must be withdrawn.
Observed interactions: Anticonvulsants (e.g. phenytoin; barbiturates) psychoactive drugs (e.g.amitriptyline, chlorpromazine and alprazolam), hormone preparations, corticosteroids, cyproheptadine and anti-thyroid agents may exert an influence on the results of the Metopirone test.

Anticipated interactions: Metopirone may potentiate paracetamol (acetaminophen) toxicity in humans.

4.6 Fertility, pregnancy and lactation

Effects on fertility
Studies on fertility have not been performed with Metopirone.

Use in pregnancy
Safety in pregnancy has not been established; therefore the drug should not be used in pregnant women unless it is urgently indicated and the expected benefits outweigh any potential risk.

Use in lactation
It is not known if the active substance of Metopirone passes into the breast milk, hence nursing mothers should refrain from breast feeding their infants during treatment with Metopirone.

4.7 Effects on ability to drive and use machines
Since Metopirone may cause dizziness and sedation, patients should exercise caution when driving or operating machinery.

4.8 Adverse effects (Undesirable effects)
Adverse drug reactions are ranked under heading of frequency, the most frequent first, using the following convention: very common (≥1/10); common (≥1/100, <1/10); uncommon (≥1/1,000, <1/100); rare (≥1/10,000, <1/1,000) very rare (<1/10,000), not known (cannot be estimated from the available data). Within each frequency grouping, adverse reactions are ranked in order of decreasing seriousness.

Blood and the lymphatic system disorders:
Not known: Bone marrow failure

Endocrine disorders:
Rare: Adrenal insufficiency

Nervous system disorders:
Common: Dizziness, sedation, headache
Not known: Light-headedness

Vascular disorders
Common: Hypotension
Not known: Hypertension

Gastrointestinal disorders
Common: Nausea, vomiting
Rare: Abdominal pain

Skin and subcutaneous tissue disorders:
Rare: Allergic skin reactions, hirsutism
Not known: Alopecia

Reporting of suspected adverse reactions
Reporting suspected adverse reactions after registration of the medicinal product is important. It allows continued monitoring of the benefit-risk balance of the medicinal product. Healthcare professionals are asked to report any suspected adverse reactions at www.tga.gov.au/reporting-problems.
4.9 Overdose

**Symptoms**

The chief features of the clinical picture of an overdosage of Metopirone are gastro-intestinal symptoms and signs of acute adrenocortical insufficiency.

Laboratory findings: hyponatraemia, hypochloraemia, hyperkalaemia.

In patients under treatment with insulin or oral antidiabetics, the signs and symptoms of acute poisoning with Metopirone may be aggravated or modified.

**Treatment**

There is no specific antidote. Besides the usual measures taken in cases of poisoning to eliminate the drug and reduce absorption, large doses of glucocorticoids, electrolyte and fluid replacement, and glucose infusions are indicated.

For a few days: blood pressure and fluid and electrolyte balance should be monitored.

For information on the management of overdose, contact the Poisons Information Centre on 13 11 26 (Australia).

5. PHARMACOLOGICAL PROPERTIES

Pharmacotherapeutic group: Diagnostic agent, test for pituitary function. ATC code: V04CD01.

5.1 Pharmacodynamic properties

**Mechanism of action**

Metopirone inhibits reversibly the biosynthesis of cortisol, corticosterone, and aldosterone in the adrenal cortex by blocking enzymatic 11-beta-hydroxylation in the steroid ring. In the normal person, a compensatory increase in ACTH release follows and the secretion of 11-desoxycortisol, 11-desoxy cortisol and 17-hydroxycorticoids is markedly accelerated.

**Clinical trials**

No data available

5.2 Pharmacokinetic properties

**Absorption**

Metyrapone is rapidly absorbed after administration by mouth and is also rapidly eliminated from the plasma. Peak concentrations are usually attained in plasma 1 hour after ingestion of Metopirone.

**Distribution**

Following a dose of 750 mg, the mean peak concentration is 3.7 µg/mL and decreases to a mean value of 0.5 µg/mL 4 hours after ingestion.

**Metabolism**

The elimination half-life of metyrapone from plasma is 20 to 26 minutes. Metyrapol (reduced metyrapone) is the principal active metabolite. The metyrapone / metyrapol ratio in the plasma 8 hours after a single oral dose is 1/1.5.

**Excretion**

Following a total dosage of 4.5 g metyrapone (750 mg every 4 hours), the quantities excreted in the urine 72 hours after the first dose averaged 5.3% of the total dosage in the form of metyrapone (9.2% in free form and 90.8% conjugated with glucuronic acid) and 38.5% in the form of metyrapol (8.1% in free form and 91.9% conjugated with glucuronic acid).
5.3 Preclinical safety data

Genotoxicity
No studies for genotoxicity have been performed with Metopirone.

Carcinogenicity
No studies for carcinogenicity have been performed with Metopirone.

Teratogenicity
Animal reproduction studies, adequate to evaluate teratogenicity and postnatal development, have not been conducted.

6. PHARMACEUTICAL PARTICULARS

6.1 List of excipients
It also contains sodium ethyl hydroxybenzoate, ethyl vanillin, gelatin, glycerol, acetanisole, Macrogol 400, Macrogol 4000, sodium propyl hydroxybenzoate, titanium dioxide, purified water and Edible ink Red (ARTG No 3115) as excipients.

6.2 Incompatibilities
Incompatibilities were either not assessed or not identified as part of the registration of this medicine.

6.3 Shelf life
In Australia, information on the shelf life can be found on the public summary of the Australian Register of Therapeutic Goods (ARTG). The expiry date can be found on the packaging.

6.4 Special precautions for storage
Store below 25°C. Protect from moisture. Keep out of the reach and sight of children.

6.5 Nature and contents of container
Each HDPE bottle with PP CR closure with a liner for induction seal contains 50 capsules.

6.6 Special precautions for disposal
In Australia, any unused medicine or waste material should be disposed of by taking to your local pharmacy.

6.7 Physicochemical properties

Chemical structure
Chemical name: 2-methyl-1,2-di-3-pyridyl-1-propanone
Molecular formula: C_{14}H_{14}N_{2}O
Molecular weight: 226.27

[Chemical structure diagram]
CAS number
54-36-4

7. MEDICINE SCHEDULE (POISONS STANDARD)
Schedule 4 (S4) Prescription Only Medicine

8. SPONSOR
Clinect Pty Ltd
120-132 Atlantic Drive
Keysborough Victoria 3173
Telephone: 1800 899 005

9. DATE OF FIRST APPROVAL
2 August 1991

10. DATE OF REVISION
18 December 2018
®Registered trademark

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