Diprofol® 1%

Propofol 1%

For IV Administration

1. Name of the medicinal product

Diprofol 1% (propofol 10 mg/ml).

2. Qualitative and quantitative composition

Diprofol 10 mg/ml, emulsion for injection or infusion, contains 10 mg/ml propofol.

The solution contains as excipients soybean oil and egg lecithin, which are also used in intravenous feeding. It contains no preservatives.

For the full list of excipients, see section 6.1.

3. Pharmaceutical form

Emulsion for injection or infusion.

Diprofol is a white, aqueous isotonic oil-in-water emulsion for intravenous administration.

4. Clinical particulars

4.1 Therapeutic indications

Diprofol 1% is a short-acting intravenous general anaesthetic for:

- induction and maintenance of general anaesthesia in adults and children > 1 month.
- sedation of ventilated patients > 16 years of age in the intensive care unit.
- sedation for diagnostic and surgical procedures, alone or in combination with local or regional anaesthesia in adults and children > 1 month.

4.2 Posology and method of administration

Posology

Propofol must be used only in well equipped hospitals or medical centers by doctors trained in anaesthesia or the treatment of intensive care patients. Continual monitoring of the circulation and the respiration (for example, ECG pulse oxymeter) is necessary. Provisions for prevention of airway obstruction, artificial respiration and other resuscitation provisions must be immediately available at all times. As regards sedation during surgical or diagnostic operations propofol must not be administered by the same person who performs the surgical or diagnostic operation.

Additional analgesics are generally necessary in combination with propofol.

4.2.1 Induction of General Anaesthesia

Adults

In unpremedicated and premedicated patients, it is recommended that Diprofol 1% should be titrated (approximately 4 ml [40 mg] every 10 seconds in an average healthy adult by bolus injection or infusion) against the response of the patient until the clinical signs show the onset of anaesthesia. Most adult patients aged less than 55 years are likely to require 1.5–2.5 mg/kg of Diprofol 1%. The total dose required can be reduced by lower rates of administration (2–5 ml/min [20–50 mg/min]).

In patients over this age and in patients of ASA grades III 3 and IV 4, especially those with impaired cardiac function, the dosage requirements will be less and the total dose of Diprofol 1% may be reduced to a minimum of 1 mg/kg body weight. In these patients lower rates of administration should be applied (approximately 2 ml, corresponding to 20 mg every 10 seconds).

Elderly

In older people the dose requirement for induction of anaesthesia with Diprofol 1% is reduced. The reduction should take into account the physical status and age of the patient. The reduced dose should be given at a slower rate and titrated against the response.

Paediatric population

Diprofol 1% is not indicated for induction of anaesthesia in children aged less than 1 month.

For induction of anaesthesia in children over 1 month of age, Diprofol 1% should be titrated slowly until clinical signs show the onset of anaesthesia. The dose should be adjusted according to age and/or body weight. Most patients over 8 years of age require approximately 2.5 mg/kg body weight of Diprofol 1% for induction of anaesthesia. In younger children, especially between the age of 1 month and 3 years, dose requirements may be higher (2.5–4 mg/kg body weight).

For ASA 3 and 4 patients lower doses are recommended (see also Section 4.4).

4.2.2 Maintenance of General Anaesthesia

Adults

Anaesthesia can be maintained by administering Diprofol 1% either by continuous infusion or by repeat bolus injections to prevent the clinical signs of light anaesthesia. Recovery from anaesthesia is typically rapid and it is therefore important to maintain Diprofol 1% administration until the end of the procedure.

Continuous Infusion

The required rate of administration varies considerably between patients, but rates in the region of 4–12 mg/kg/h usually maintain satisfactory anaesthesia.

Repeat Bolus Injections

If a technique involving repeat bolus injections is used, increments of 25 mg (2.5 ml) to 50 mg (5.0 ml) may be given according to clinical need.

Elderly

When Diprofol 1% is used for maintenance of anaesthesia the rate of infusion or 'target concentration' should also be reduced. Patients of ASA grades 3 and 4 will require further reductions in dose and dose rate. Rapid bolus administration (single or repeated) should not be used in older people as this may lead to cardiorespiratory depression.

Paediatric population

Diprofol 1% is not indicated for maintenance of anaesthesia in children aged less than 1 month.

Anaesthesia can be maintained in children over 1 month of age by administering Diprofol 1% by infusion or repeated bolus injection to maintain the depth of anaesthesia required. The required rate of administration varies considerably between patients, but rates in the region of 9–15 mg/kg/h usually achieve satisfactory anaesthesia. In younger children, especially between the age of 1 month and 3 years, dose requirements may be higher.

For ASA 3 and 4 patients lower doses are recommended (see also Section 4.4).

4.2.3 Sedation During Intensive Care

Adults

For sedation during intensive care it is advised that Diprofol 1% should be administered by continuous infusion. The infusion rate should be determined by the desired depth of sedation. In most patients sufficient sedation can be obtained with a dosage of 0.3–4 mg/kg/h of Diprofol 1% (see section 4.4 Special warnings and precautions for use). Diprofol 1% is not indicated for sedation in intensive care of patients of 16 years of age or younger (see 4.3 Contraindications).

It is recommended that blood lipid levels be monitored should Diprofol 1% be administered to patients thought to be at particular risk of fat overload. Administration of Diprofol 1% should be adjusted appropriately if the monitoring indicates that fat is being inadequately cleared from the body. If the patient is receiving other intravenous lipid concurrently, a reduction in quantity should be made in order to take account of the amount of lipid infused as part of the Diprofol 1% formulation; 1.0 ml of Diprofol 1% contains approximately 0.1g of fat.

If the duration of sedation is in excess of 3 days, lipids should be monitored in all patients.

Elderly

When Diprofol 1% is used for sedation the rate of infusion should also be reduced. Patients of ASA grades 3 and 4 will require further reductions in dose and dose rate. Rapid bolus administration (single or repeated) should not be used in older people as this may lead to cardiorespiratory depression.

Paediatric population

Diprofol 1% is contraindicated for the sedation of ventilated children aged 16 years or younger receiving intensive care.

4.2.4 Sedation for Surgical and Diagnostic Procedures

Adults

To provide sedation for surgical and diagnostic procedures, rates of administration should be individualised and titrated to clinical response.

Most patients will require 0.5–1 mg/kg over 1–5 minutes for onset of sedation.

Maintenance of sedation may be accomplished by titrating Diprofol 1% infusion to the desired level of sedation - most patients will require 1.5–4.5 mg/kg/h. In addition to the infusion, bolus administration of 10–20 mg may be used if a rapid increase in the depth of sedation is required. In patients of ASA Grades 3 and 4 the rate of administration and dosage may need to be reduced.

Elderly

When Diprofol 1% is used for sedation the rate of infusion or 'target concentration' should also be reduced. Patients of ASA grades 3 and 4 will require further reductions in dose and dose rate. Rapid bolus administration (single or repeated) should not be used in older people as this may lead to cardiorespiratory depression.

Paediatric population

Diprofol 1% is not indicated for surgical and diagnostic procedures in children aged less than 1 month.

In children over 1 month of age, doses and administration rates should be adjusted according to the required depth of sedation and the clinical response. Most paediatric patients require 1–2 mg/kg body weight of Diprofol 1% for onset of sedation. Maintenance of sedation may be accomplished by titrating Diprofol 1% infusion to the desired level of sedation. Most patients require 1.5–9 mg/kg/h Diprofol 1%. The infusion may be supplemented by bolus administration of up to 1 mg/kg body weight if a rapid increase of depth of sedation is required.

In ASA 3 and 4 patients lower doses may be required.

4.2.5 Method of administration

Method of administration

Propofol 10 mg/ml should be administered intravenously as injection or as continuous infusion, either undiluted or diluted with an infusion solution with glucose 5% or sodium chloride 0.9%.

Both solutions in glass bottles and in PVC sachets can be used, but must be mixed well before administration.

Ampoules and vials should be shaken before use.

Before use the neck of the ampoule and the rubber stopper of the infusion vial must be disinfected with medicinal alcohol (spray or tissues). After use, any remaining medicine must be destroyed.

Propofol does not contain any preservatives and promotes the growth of micro-organisms. After opening of an ampoule or piercing of a vial, the contents must therefore immediately be put aseptically into a sterile syringe or infusion system and then administered directly. During the infusion period the sterility of both propofol and the infusion system should be maintained.

Medicines or fluids that are added to a running propofol infusion must be added close to the cannula. Propofol must not be administered via infusion systems that are provided with microbial filters. The contents of an ampoule or a vial of propofol and any syringe of propofol are intended for single administration to one patient. Any remaining medicine must be destroyed after use.

Infusion of undiluted propofol 10 mg/ml

When propofol is administered by means of a continuous infusion, control of the infusion rate by means of a burette, drop counter, syringe pump or volumetric infusion pump is recommended. As is the case for parenteral administration of all kinds of fat emulsions, the duration of use of one infusion system for a continuous infusion with propofol must remain limited to 12 hours. The infusion system and the container must be removed and replaced after a maximum of 12 hours. Residues of propofol left over at the end of the infusion period or after changing of the system must be destroyed.

Infusion of diluted Propofol 10 mg/ml

When propofol 10 mg/ml is administered diluted by means of a continuous infusion, control of the rate of infusion by means of a burette, drop counter, syringe pump or volumetric infusion pump is recommended to prevent accidental administration of too large doses of diluted propofol 10mg/ml.

The maximum dilution must not be more than 1 part propofol 10 mg/ml in 4 parts glucose 5% or sodium chloride 0.9% infusion solution (minimum concentration 2 mg propofol/ml)

The mixture must be prepared aseptically immediately before administration and must be used within 6 hours after preparation.

Propofol 10 mg/ml must not be mixed with other injection or infusion fluids except those mentioned in heading 6.6. However, simultaneous administration of propofol 10 mg/ml and propofol 20 mg/ml together with an infusion of glucose 5% or sodium chloride 0.9% via Y-connector close to the injection site is possible.

In order to diminish pain at the beginning of the injection, propofol 10 mg/ml can be mixed with lidocaine 1% solution for injection without preservatives (mix 20 parts propofol 10 mg/ml with 1 part lidocaine 1% solution for injection).

Before administering the muscle relaxant, atracurium, after administration of propofol through the same infusion system, it is recommended to flush out the infusion system.

Duration of administration

Propofol can be administered for a maximum of 7 days.

4.3 Contraindications

Hypersensitivity to the active substance or to any of the excipients listed in section 6.1.

Diprofol 1% contains soybean oil and should not be used in patients who are hypersensitive to peanut or soya.

Diprofol 1% must not be used in patients of 16 years of age or younger for sedation in intensive care (see section 4.4).

4.4 Special warnings and precautions for use

Diprofol 1% should be given by those trained in anaesthesia (or, where appropriate, doctors trained in the care of patients in Intensive Care).

Patients should be constantly monitored and facilities for maintenance of a patient airway, artificial ventilation, oxygen enrichment and other resuscitative facilities should be readily available at all times. Diprofol 1% should not be administered by the person conducting the diagnostic or surgical procedure.

Abuse of, and dependence on Diprofol 1%, predominantly by health care professionals, have been reported. As with other general anaesthetics, the administration of Diprofol 1% without airway care may result in fatal respiratory complications.

When Diprofol 1% is administered for conscious sedation, for surgical and diagnostic procedures, patients should be continually monitored for early signs of hypotension, airway obstruction and oxygen desaturation.

As with other sedative agents, when Diprofol 1% is used for sedation during operative procedures, involuntary patient movements may occur. During procedures requiring immobility these movements may be hazardous to the operative site.

An adequate period is needed prior to discharge of the patient to ensure full recovery after use of Diprofol 1%. Very rarely the use of Diprofol 1% may be associated with the development of a period of postoperative unconsciousness, which may be accompanied by an increase in muscle tone. This may or may not be preceded by a period of wakefulness. Although recovery is spontaneous, appropriate care of an unconscious patient should be administered.

Diprofol 1% induced impairment is not generally detectable beyond 12 hours. The effects of Diprofol 1%, the procedure, concomitant medications, the age and the condition of the patient should be considered when advising patients on:

- The advisability of being accompanied on leaving the place of administration
- The timing of recommencement of skilled or hazardous tasks such as driving
- The use of other agents that may sedate (e.g., benzodiazepines, opiates, alcohol)

As with other intravenous anaesthetic agents, caution should be applied in patients with cardiac, respiratory, renal or hepatic impairment or in hypovolaemic or debilitated patients. Diprofol 1% clearance is blood flow dependent, therefore, concomitant medication that reduces cardiac output will also reduce Diprofol 1% clearance.

Diprofol 1% lacks vagolytic activity and has been associated with reports of bradycardia (occasionally profound) and also asystole. The intravenous administration of an anticholinergic agent before induction, or during maintenance of anaesthesia should be considered, especially in situations where vagal tone is likely to predominate, or when Diprofol 1% is used in conjunction with other agents likely to cause a bradycardia.

As with other intravenous anaesthetic and sedative agents, patients should be instructed to avoid alcohol before and for at least 8 hours after administration of Diprofol 1%.

During bolus administration for operative procedures, extreme caution should be exercised in patients with acute pulmonary insufficiency or respiratory depression.

Concomitant use of central nervous system depressants e.g., alcohol, general anaesthetics, narcotic analgesics will result in accentuation of their sedative effects. When Diprofol 1% is combined with centrally depressant drugs administered parenterally, severe respiratory and cardiovascular depression may occur. It is recommended that Diprofol 1% is administered following the analgesic and the dose should be carefully titrated to the patient's response (see Section 4.5).

During induction of anaesthesia, hypotension and transient apnoea may occur depending on the dose and use of premedicants and other agents.

Occasionally, hypotension may require use of intravenous fluids and reduction of the rate of administration of Diprofol 1% during the period of anaesthetic maintenance.

When Diprofol 1% is administered to an epileptic patient, there may be a risk of convulsion.

Appropriate care should be applied in patients with disorders of fat metabolism and in other conditions where lipid emulsions must be used cautiously (see section 4.2).

Use is not recommended with electroconvulsive treatment.

As with other anaesthetics, sexual disinhibition may occur during recovery.

The benefits and risks of the proposed procedure should be considered prior to proceeding with repeated or prolonged use (>3 hours) of propofol in young children (<3 years) and in pregnant women as there have been reports of neurotoxicity in preclinical studies, see Section 5.3.

Paediatric population

The use of Diprofol 1% is not recommended in newborn infants as this patient population has not been fully investigated. Pharmacokinetic data (see section 5.2) indicate that clearance is considerably reduced in neonates and has a very high inter-individual variability. Relative overdose could occur on administering doses recommended for older children and result in severe cardiovascular depression.

Diprofol 2% is not recommended for use in children < 3 years of age due to difficulty in titrating small volumes.

Propofol must not be used in patients of 16 years of age or younger for sedation for intensive care as the safety and efficacy of propofol for sedation in this age group have not been demonstrated (see section 4.3).

Advisory statements concerning Intensive Care Unit management

Use of propofol emulsion infusions for ICU sedation has been associated with a constellation of metabolic derangements and organ system failures that may result in death. Reports have been received of combinations of the following: Metabolic acidosis, Rhabdomyolysis, Hyperkalaemia, Hepatomegaly, Renal failure, Hyperlipidaemia, Cardiac arrhythmia, Brugada-type ECG (elevated ST-segment and coved T-wave) and rapidly progressive Cardiac failure usually unresponsive to inotropic supportive treatment. Combinations of these events have been referred to as the Propofol Infusion Syndrome. These events were mostly seen in patients with serious head injuries and children with respiratory tract infections who received dosages in excess of those advised in adults for sedation in the intensive care unit.

The following appear to be the major risk factors for the development of these events: decreased oxygen delivery to tissues; serious neurological injury and/or sepsis; high dosages of one or more of the following pharmacological agents - vasoconstrictors, steroids, inotropes and/or Diprofol 1% (usually at dose rates greater than 4mg/kg/h for more than 48 hours).

Prescribers should be alert to these events in patients with the above risk factors and immediately

discontinue propofol when the above signs develop. All sedative and therapeutic agents used in the intensive care unit (ICU), should be titrated to maintain optimal oxygen delivery and haemodynamic parameters. Patients with raised intra-cranial pressure (ICP) should be given appropriate treatment to support the cerebral perfusion pressure during these treatment modifications.

Treating physicians are reminded if possible not to exceed the dosage of 4 mg/kg/h.

Appropriate care should be applied in patients with disorders of fat metabolism and in other conditions where lipid emulsions must be used cautiously.

It is recommended that blood lipid levels should be monitored if propofol is administered to patients thought to be at particular risk of fat overload. Administration of propofol should be adjusted appropriately if the monitoring indicates that fat is being inadequately cleared from the body. If the patient is receiving other intravenous lipid concurrently, a reduction in quantity should be made in order to take account of the amount of lipid infused as part of the propofol formulation; 1.0 mL of Diprofol 1% contains approximately 0.1 g of fat.

Diprofol 1% contains 0.06 mg sodium per ml. To be taken into consideration by patients on a controlled sodium diet.

Additional Precautions

Caution should be taken when treating patients with mitochondrial disease. These patients may be susceptible to exacerbations of their disorder when undergoing anaesthesia, surgery and ICU care. Maintenance of normothermia, provision of carbohydrates and good hydration are recommended for such patients. The early presentations of mitochondrial disease exacerbation and of the 'Propofol Infusion Syndrome' may be similar.

Diprofol 1% contains no antimicrobial preservatives and supports growth of micro-organisms.

EDTA chelates metal ions, including zinc, and reduces microbial growth rates. The need for supplemental zinc should be considered during prolonged administration of Diprofol 1%, particularly in patients who are predisposed to zinc deficiency, such as those with burns, diarrhoea and/or major sepsis.

When Diprofol 1% is to be aspirated, it must be drawn aseptically into a sterile syringe or giving set immediately after opening the ampoule or breaking the vial seal. Administration must commence without delay. Asepsis must be maintained for both Diprofol 1% and infusion equipment throughout the infusion period. Any infusion fluids added to the Diprofol 1% line must be administered close to the cannula site. Diprofol 1% must not be administered via a microbiological filter.

Diprofol 1% and any syringe containing Diprofol 1% are for single use in an individual patient. In accordance with established guidelines for other lipid emulsions, a single infusion of propofol must not exceed 12 hours. At the end of the procedure or at 12 hours, whichever is the sooner; both the reservoir of propofol and the infusion line must be discarded and replaced as appropriate.

4.5 Interaction with other medicinal products and other forms of interaction

Diprofol 1% has been used in association with spinal and epidural anaesthesia and with commonly used premedicants, neuromuscular blocking drugs, inhalational agents and analgesic agents; no pharmacological incompatibility has been encountered. Lower doses of Diprofol 1% may be required where general anaesthesia is used as an adjunct to regional anaesthetic techniques. Profound hypotension has been reported following anaesthetic with propofol in patients treated with rifampicin.

The concurrent administration of other CNS depressants such as pre-medication drugs, inhalation agents, analgesic agents may add to the sedative, anaesthetic and cardiorespiratory depressant effects of Diprofol 1% (see Section 4.4).

A need for lower propofol doses has been observed in patients taking valproate. When used concomitantly, a dose reduction of propofol may be considered.

4.6 Fertility, pregnancy and lactation

Pregnancy

The safety of Diprofol 1% during pregnancy has not been established. Studies in animals have shown reproductive toxicity (see section 5.3). Diprofol 1% should not be given to pregnant women except when absolutely necessary. Diprofol 1% can, however, be used during an induced abortion.

Obstetrics

Diprofol 1% crosses the placenta and can cause neonatal depression. It should not be used for obstetric anaesthesia unless clearly necessary.

Breast-feeding

Studies of breast-feeding mothers showed that small quantities of Diprofol 1% are excreted in human milk. Women should therefore not breast-feed for 24 hours after administration of Diprofol 1%. Milk produced during this period should be discarded.

4.7 Effects on ability to drive and use machines

Diprofol 1% has moderate influence on the ability to drive and use machines. Patients should be advised that performance at skilled tasks, such as driving and operating machinery, may be impaired for some time after general anaesthesia.

Diprofol 1% induced impairment is not generally detectable beyond 12 hours (Section 4.4).

4.8 Undesirable effects

General

Induction and maintenance of anaesthesia or sedation is generally smooth with minimal evidence of excitation. The most commonly reported ADRs are pharmacologically predictable side effects of an anaesthetic/sedative agent, such as hypotension. The nature, severity and incidence of adverse events observed in patients receiving Diprofol 1% may be related to the condition of the recipients and the operative or therapeutic procedures being undertaken.

The following definitions of frequencies are used:

Very common (≥1/10), common (≥1/100 to <1/10), uncommon (≥1/1,000 to <1/100), rare (≥1/10,000 to <1/1,000), very rare (<1/10,000) and not known (cannot be estimated from the available data).

Table of Adverse Drug Reactions

System Organ Class	Frequency	Undesirable Effects
Immune system disorders	Very rare	Anaphylaxis – may include angioedema, bronchospasm, erythema and hypotension
Metabolism and nutrition disorders	Not known [9]	Metabolic acidosis [5], hyperkalaemia [5], hyperlipidaemia [5]
Psychiatric disorders	Not known [9]	Euphoric mood. Drug abuse and drug dependence [8]
Nervous system disorders	Common	Headache during recovery phase
	Rare	Epileptiform movements, including convulsions and opisthotonus during induction, maintenance and recovery
	Very rare	Postoperative unconsciousness
	Not known [9]	Involuntary movements
Cardiac disorders	Common	Bradycardia [1]
	Very rare	Pulmonary oedema
	Not known [9]	Cardiac arrhythmia [5], cardiac failure [5], [7]
Vascular disorders	Common	Hypotension [2]
	Uncommon	Thrombosis and phlebitis
Respiratory, thoracic and mediastinal disorders	Common	Transient apnoea during induction
	Not known [9]	Respiratory depression (dose dependent)
Gastrointestinal disorders	Common	Nausea and vomiting during recovery phase
	Very rare	Pancreatitis
Hepatobiliary disorders	Not known [9]	Hepatomegaly [5]
Musculoskeletal and connective tissue disorders	Not known [9]	Rhabdomyolysis [3], [5]
Renal and urinary disorders	Very rare	Discolouration of urine following prolonged administration
	Not known [9]	Renal failure [5]
Reproductive system and breast disorders	Very rare	Sexual disinhibition
	Not known	Priapism
General disorders and administration site conditions	Very common	Local pain on induction [4]
	Very rare	Tissue necrosis [10] following accidental extravascular administration
	Not known [9]	Local pain, swelling, following accidental extravascular administration
Investigations	Not known [9]	Brugada type ECG [5], [6]
Injury, poisoning and procedural complications	Very rare	Postoperative fever

[1] Serious bradycardias are rare. There have been isolated reports of progression to asystole.

[2] Occasionally, hypotension may require use of intravenous fluids and reduction of the administration rate of Diprofol.

[3] Very rare reports of rhabdomyolysis have been received where Diprofol has been given at doses greater than 4 mg/kg/hr for ICU sedation.

[4] May be minimised by using the larger veins of the forearm and antecubital fossa. With Diprofol 1% local pain can also be minimised by the co-administration of lidocaine.

[5] Combinations of these events, reported as "Propofol Infusion Syndrome", may be seen in seriously ill patients who often have multiple risk factors for the development of the events, see section 4.4.

[6] Brugada-type ECG - elevated ST-segment and coved T-wave in ECG.

[7] Rapidly progressive cardiac failure (in some cases with fatal outcome) in adults. The cardiac failure in such cases was usually unresponsive to inotropic supportive treatment.

[8] Abuse of and drug dependence on propofol, predominantly by health care professionals.

[9] Not known as it cannot be estimated from the available clinical trial data.

[10] Necrosis has been reported where tissue viability has been impaired.

Dystonia/dyskinesia have been reported.

Local

The local pain which may occur during the induction phase of Diprofol 1% anaesthesia can be minimised by the co-administration of lidocaine (see "Dosage and Administration") and by the use of the larger veins of the forearm and antecubital fossa. Thrombosis and phlebitis are rare. Accidental clinical extravasation and animal studies showed minimal tissue reaction. Intra-arterial injection in animals did not induce local tissue effects.

Reporting of suspected adverse reactions

Reporting suspected adverse reactions after authorization of the medicinal product is important. It allows continued monitoring of the benefit/risk balance of the medicinal product.

Any suspected adverse events should be reported to the Ministry of Health according to the National Regulation by using an online form:
https://sideeffects.health.gov.il

4.9 Overdose

Accidental overdosage is likely to cause cardiorespiratory depression. Respiratory depression should be treated by artificial ventilation with oxygen. Cardiovascular depression would require lowering of the patient's head and, if severe, use of plasma expanders and pressor agents.

5. Pharmacological properties

5.1 Pharmacodynamic properties

Pharmacotherapeutic group: Other general anaesthetics

ATC code: N01AX10

Mechanism of action

Propofol (2, 6-diisopropylphenol) is a short-acting general anaesthetic agent with a rapid onset of action of approximately 30 seconds. Recovery from anaesthesia is usually rapid. The mechanism of action, like all general anaesthetics, is poorly understood. However, propofol is thought to produce its sedative/anaesthetic effects by the positive modulation of the inhibitory function of the neurotransmitter GABA through the ligand-gated $GABA_A$ receptors.

Pharmacodynamic properties

In general, falls in mean arterial blood pressure and slight changes in heart rate are observed when Diprofol 1% is administered for induction and maintenance of anaesthesia. However, the haemodynamic parameters normally remain relatively stable during maintenance and the incidence of untoward haemodynamic changes is low.

Although ventilatory depression can occur following administration of Diprofol 1%, any effects are qualitatively similar to those of other intravenous anaesthetic agents and are readily manageable in clinical practice.

Diprofol 1% reduces cerebral blood flow, intracranial pressure and cerebral metabolism. The reduction in intracranial pressure is greater in patients with an elevated baseline intracranial pressure.

Clinical efficacy and safety

Recovery from anaesthesia is usually rapid and clear headed with a low incidence of headache and post-operative nausea and vomiting.

In general, there is less post-operative nausea and vomiting following anaesthesia with Diprofol 1% than following anaesthesia with inhalational agents. There is evidence that this may be related to a reduced emetic potential of propofol.

Diprofol 1%, at the concentrations likely to occur clinically, does not inhibit the synthesis of adrenocortical hormones.

Paediatric population

Limited studies on the duration of propofol based anaesthesia in children indicate safety and efficacy is unchanged up to duration of 4 hours. Literature evidence of use in children documents use for prolonged procedures without changes in safety or efficacy.

5.2 Pharmacokinetic properties

Absorption

When Diprofol 1% is used to maintain anaesthesia, blood concentrations asymptotically approach the steady-state value for the given administration rate.

Distribution

Propofol is extensively distributed and rapidly cleared from the body (total body clearance 1.5–2 litres/minute).

Elimination

The decline in propofol concentrations following a bolus dose or following the termination of an infusion can be described by a three compartment open model with very rapid distribution (half-life 2–4 minutes), rapid elimination (half-life 30–60 minutes), and a slower final phase, representative of redistribution of propofol from poorly perfused tissue.

Clearance occurs by metabolic processes, mainly in the liver where it is blood flow dependent, to form inactive conjugates of propofol and its corresponding quinol, which are excreted in urine.

After a single dose of 3 mg/kg intravenously, propofol clearance/kg body weight increased with age as follows: Median clearance was considerably lower in neonates <1 month old (n=25) (20 ml/kg/min) compared to older children (n= 36, age range 4 months–7 years). Additionally inter-individual variability was considerable in neonates (range 3.7–78 ml/kg/min). Due to this limited trial data that indicates a large variability, no dose recommendations can be given for this age group.

Median propofol clearance in older aged children after a single 3 mg/kg bolus was 37.5 ml/min/kg (4–24 months) (n=8), 38.7 ml/min/kg (11–43 months) (n=6), 48 ml/min/kg (1–3 years)(n=12), 28.2 ml/min/kg (4–7 years)(n=10) as compared with 23.6 ml/min/kg in adults (n=6).

Linearity

The pharmacokinetics are linear over the recommended range of infusion rates of Diprofol 1%.

5.3 Preclinical safety data

Published studies in animals (including primates) at doses resulting in light to moderate anaesthesia demonstrate that the use of anaesthetic agents during the period of rapid brain growth or synaptogenesis results in cell loss in the developing brain that can be associated with prolonged cognitive deficiencies. Based on comparisons across species, the window of vulnerability to these changes is believed to correlate with exposures in the third trimester through the first several months of life, but may extend out to approximately 3 years of age in humans.

In neonatal primates, exposure to 3 hours of an anaesthetic regimen that produced a light surgical plane of anaesthesia did not increase neuronal cell loss, however, treatment regimens of 5 hours or longer increased neuronal cell loss. The clinical significance of these nonclinical findings is not known, and healthcare providers should balance the benefits of appropriate anaesthesia in young children less than 3 years of age and pregnant women who require procedures against the potential risks suggested by the preclinical data.

Propofol is a drug on which extensive clinical experience has been obtained. All relevant information for the prescriber is provided elsewhere in the Summary of Product Characteristics.

6. Pharmaceutical particulars

6.1 List of excipients

Soybean oil, glycerol, egg lecithin, oleic acid, sodium hydroxide and water for injection.

6.2 Incompatibilities

The neuromuscular blocking agent, atracurium, should not be given through the same intravenous line as Diprofol 1% without prior flushing.

6.3 Shelf life

The expiry date of the product is indicated on the packaging materials.

Shelf life after dilution

Use of diluted Diprofol 1% must begin immediately following dilution.

6.4 Special precautions for storage

Protect from light.

Store below 25°C. Do not freeze.

Ampoules and vials that their contents have been frozen can no longer be used.

6.5 Nature and contents of container

Diprofol 10 mg/ml: Glass ampoules of 20 ml

Glass vials of 50 ml

6.6 Special precautions for disposal and other handling In-use precautions

The ampoules and vials must be shaken before use.

Parts of the contents left over after use must be destroyed.

Diprofol 1% should not be mixed prior to administration with injections or infusion fluids other than 5% Dextrose or Lidocaine Injection (see Section 4.2.5).

7. Manufacturer

Synthon Hispania S.L., Barcelona, Spain

8. License Holder

Taro International Ltd.,

14 Hakitor St., Haifa Bay 2624761

9. Registration Numbers

113.40.29567.01

113.41.29568.01

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