

## **1. NAME OF THE VETERINARY MEDICINAL PRODUCT**

Alfaxan Multidose 10 mg/ml solution for injection for dogs, cats and pet rabbits

## **2. QUALITATIVE AND QUANTITATIVE COMPOSITION**

Each ml of solution contains:

### **Active substance:**

Alfaxalone 10 mg

### **Excipients:**

Ethanol	150 mg
Chlorocresol	1 mg
Benzethonium chloride	0.2 mg

For the full list of excipients, see section 6.1.

## **3. PHARMACEUTICAL FORM**

Solution for injection

Clear colourless solution

## **4. CLINICAL PARTICULARS**

### **4.1 Target Species**

Dogs, cats and pet rabbits

### **4.2 Indications for use, specifying the target species**

As an induction agent prior to inhalation anaesthesia in dogs, cats and pet rabbits.

As a sole anaesthetic agent for the induction and maintenance of anaesthesia for the performance of examination or surgical procedures in dogs and cats.

### **4.3 Contraindications**

Do not use in combination with other intravenous anaesthetic agents.

Do not use on animals with hypersensitivity to the active substance or any other excipients.

### **4.4 Special warnings for each target species**

The analgesic properties of alfaxalone are limited, therefore appropriate peri-operative analgesia should be provided in cases where procedures are anticipated to be painful.

### **4.5 Special precautions for use**

#### **(i) Special precautions for use in animals**

The safety of the veterinary medicinal product in animals less than 12 weeks of age (dogs and cats) and 16 weeks of age (rabbits) has not been demonstrated.

Transient post induction apnoea frequently occurs, particularly in dogs – see section 4.6 for details. In such cases, endotracheal intubation and oxygen supplementation should be employed. Facilities for intermittent positive pressure ventilation should be available. In order to minimise the possibility of

apnoea, administer the veterinary medicinal product by slow intravenous injection and not as a rapid dose.

In rabbits, oxygenation prior to administration of the product for induction of anaesthesia is essential in order to reduce the risk of life-threatening hypoxaemia post-induction, which can occur secondary to respiratory depression or apnoea.

In rabbits, an intravenous catheter should be used to administer the product due to the possibility of reactions (e.g. head-shaking and scratching at ear) during administration (please refer to section 4.6). The use of a preplaced catheter in dogs and cats is also recommended as best practice for anaesthetic procedures.

Especially when using higher doses of the veterinary medicinal product, a dose-dependent respiratory depression may occur. Oxygen and/or intermittent positive pressure ventilation should be administered to counteract the threatening hypoxaemia/hypercapnea. This should be particularly important in risky anaesthetic cases and whenever the anaesthesia is to be carried out for a longer period of time. In rabbits, oxygenation is essential before induction of anaesthesia and throughout the entire anaesthetic procedure.

In dogs and cats, the dose interval for maintenance of anaesthesia by intermittent bolus administration may require lengthening by more than 20%, or the maintenance dose by intravenous infusion may require reduction by more than 20%, when hepatic blood flow is severely diminished or hepatocellular injury is severe. In cats or dogs with renal insufficiency, doses for induction and maintenance may require reduction.

As with all general anaesthetic agents:

- It is advisable to ensure that dogs and cats have been fasted before receiving the anaesthetic. Rabbits should not be fasted, but food should be removed one hour before anaesthesia.
- As with other intravenous anaesthetic agents, caution should be exercised in animals with cardiac or respiratory impairment, or in hypovolaemic or debilitated animals.
- Additional monitoring is advised and particular attention should be paid to respiratory parameters in aged animals, or in cases where there may be additional physiological stress imposed by pre-existing pathology, shock or caesarean section.
- Following induction of anaesthesia, the use of an endotracheal tube is recommended to maintain airway patency.
- It is advisable to administer supplemental oxygen during maintenance of anaesthesia.
- Respiratory embarrassment may occur – ventilation of the lungs with oxygen should be considered if haemoglobin saturation with oxygen (SpO<sub>2</sub>%) falls below 90% or if apnoea persists for longer than 60 seconds.
- If cardiac arrhythmias are detected, attention to respiratory ventilation with oxygen is the first priority followed by appropriate cardiac therapy or intervention.

During recovery, it is preferable that animals are not handled or disturbed. In dogs and cats, this may lead to paddling, minor muscle twitching or movements that are more violent. While better avoided, such reactions are clinically insignificant. Post-anaesthetic recovery should thus take place in appropriate facilities and under sufficient supervision. Use of a benzodiazepine as the sole premedicant in dogs and cats may increase the probability of psychomotor excitement. Muscle twitching/tremors may be observed in a small proportion of rabbits anaesthetised with the veterinary medicinal product. However, such reactions are not considered to be clinically significant.

#### (ii) Special precautions to be taken by the person administering the veterinary medicinal product to animals

This product is a sedative, exercise caution to avoid accidental self-injection.

Preferably use a guarded needle until the moment of injection.

In case of accidental self-injection seek immediate medical attention and show the product literature.

The product may cause irritation if it comes into contact with the skin or eyes.

Rinse any splashes from skin or eyes immediately with water.

#### **4.6 Adverse reactions (frequency and seriousness)**

In clinical studies using the veterinary medicinal product, post induction apnoea, which was defined as the cessation of breathing for 30 seconds or more, was very common in dogs and cats, and common in rabbits.

Based on post marketing safety experience, neurological signs (convulsions, myoclonus, tremor, prolonged anaesthesia), cardio respiratory signs (cardiac arrests, bradycardia, bradypnea) and behavioural signs (hyperactivity, vocalisation) have been reported very rarely.

The frequency of adverse reactions is defined using the following convention:

- very common (more than 1 in 10 animals treated displaying adverse reaction(s))
- common (more than 1 but less than 10 animals in 100 animals treated)
- uncommon (more than 1 but less than 10 animals in 1,000 animals treated)
- rare (more than 1 but less than 10 animals in 10,000 animals treated)
- very rare (less than 1 animal in 10,000 animals treated, including isolated reports).

The mean duration of apnoea in these animals was 100 seconds in dogs, 60 seconds in cats and 53 seconds in rabbits. Endotracheal intubation and oxygen supplementation should therefore be employed.

In rabbits, defensive reactions (such as head-shaking, ear flicking and backing away) are commonly observed during intravenous (marginal ear vein) administration and, therefore, administration of the product via a pre-placed catheter in the marginal ear vein is recommended. Premedication may also prevent these reactions. In a field study, these reactions were not observed when rabbits had been premedicated with medetomidine in combination with either butorphanol or buprenorphine.

#### **4.7 Use during pregnancy, lactation or lay**

The safety of the veterinary medicinal product has not been established in cases where pregnancy is to be continued or during lactation. Its effects upon fertility have not been evaluated. However, studies using alfaxalone in pregnant mice, rats and rabbits have demonstrated no deleterious effects on gestation of the treated animals, or on the reproductive performance of their offspring. The product should be used in pregnant animals according to the risk-benefit assessment performed by the veterinarian. The product has been safely used in dogs for the induction of anaesthesia prior to delivery of puppies by caesarean section. In these studies, dogs were not premedicated, a dose of 1-2 mg/kg was drawn up (i.e. slightly lower than the usual 3 mg/kg dose, see section 4.9) and the product was administered as recommended, to effect.

#### **4.8 Interaction with other medicinal products and other forms of interactions**

In dogs and cats, the veterinary medicinal product has been demonstrated to be safe when used in combination with the following premedicant classes:

<b>Drug Class</b>	<b>Examples</b>
Phenothiazines	Acepromazine maleate
Anticholinergic agents	Atropine sulfate
Benzodiazepines	Diazepam, midazolam hydrochloride
Alpha-2-adrenoceptor agonists	Xylazine hydrochloride, medetomidine hydrochloride
Opiates	Methadone, morphine sulfate, butorphanol tartrate, buprenorphine hydrochloride
NSAIDs	Carprofen, meloxicam

During clinical studies in rabbits, the veterinary medicinal product was used safely with the following premedicant combinations: (i) medetomidine hydrochloride in combination with buprenorphine hydrochloride or butorphanol tartrate, and (ii) midazolam hydrochloride in combination with buprenorphine hydrochloride or butorphanol tartrate.

The concomitant use of other CNS depressants should be expected to potentiate the depressant effects of the veterinary medicinal product, necessitating cessation of further administration of the veterinary medicinal product when the required depth of anaesthesia has been reached.

The use of one premedicant or a combination of premedicants often reduces the dose of the veterinary medicinal product required.

Premedication with alpha-2-adrenoceptor agonists such as xylazine and medetomidine can markedly increase the duration of anaesthesia in a dose dependent fashion. In order to shorten recovery periods it may be desirable to reverse the actions of these premedicants.

Benzodiazepines should not be used as sole premedicants in dogs and cats as the quality of anaesthesia in some patients may be sub-optimal. Benzodiazepines may be used safely and effectively in combination with other premedicants and the veterinary medicinal product.

Refer to section 4.3.

#### **4.9 Amounts to be administered and administration route**

For intravenous use

##### Induction of anaesthesia (dogs, cats and pet rabbits):

The induction dose of the veterinary medicinal product is based on data taken from controlled laboratory and field studies and is the amount of drug required for 9 of 10 patients (i.e. 90th percentile) to be successfully induced for anaesthesia.

Dosing recommendations for induction of anaesthesia are as follows:

	<b>DOGS</b>		<b>CATS</b>		<b>RABBITS</b>	
	<b>Un-medicated</b>	<b>Premedicated</b>	<b>Un-medicated</b>	<b>Premedicated</b>	<b>Un-medicated</b>	<b>Premedicated</b>
mg/kg	3	2	5	5	5	4
ml/kg	0.3	0.2	0.5	0.5	0.5	0.4

In dogs, cats and rabbits, an intravenous catheter should be used to administer the product (please refer to sections 4.5i and 4.6).

The dosing syringe should be prepared to contain the above dose. Administration should continue until the clinician is satisfied that the depth of anaesthesia is sufficient for endotracheal intubation, or until the entire dose has been administered. The necessary injection rate can be achieved by administration of one quarter ( $\frac{1}{4}$ ) of the calculated dose every 15 seconds, so that the total dose, if required, would be administered over the first 60 seconds. If, 60 seconds after complete delivery of this first induction dose, intubation is still not possible, one further similar dose may be administered to effect.

##### Maintenance of anaesthesia (dogs and cats):

Following induction of anaesthesia with the veterinary medicinal product, the animal may be intubated and maintained on the veterinary medicinal product or an inhalation anaesthetic agent. Maintenance doses of the veterinary medicinal product may be given as supplemental boluses or as constant rate infusion. The veterinary medicinal product has been used safely and effectively in dogs and cats for procedures lasting for up to one hour. The following doses suggested for maintenance of anaesthesia are based on data taken from controlled laboratory and field studies and represent the average amount of drug required to provide maintenance anaesthesia for a dog or cat. However the actual dose will be based on the response of the individual patient.

Dosing recommendations for maintenance of anaesthesia are as follows:

	DOGS		CATS	
	Un-medicated	Premedicated	Un-medicated	Premedicated
<b>Dose for constant rate infusion</b>				
mg/kg/hour	8 - 9	6 - 7	10 - 11	7 - 8
mg/kg/minute	0.13 - 0.15	0.10 - 0.12	0.16 - 0.18	0.11 - 0.13
ml/kg/minute	0.013 - 0.015	0.010 - 0.012	0.016 - 0.018	0.011 - 0.013
<b>Bolus dose for each 10 minutes maintenance</b>				
mg/kg	1.3 - 1.5	1.0 - 1.2	1.6 - 1.8	1.1 - 1.3
ml/kg	0.13 - 0.15	0.10 - 0.12	0.16 - 0.18	0.11 - 0.13

Where maintenance of anaesthesia is with the veterinary medicinal product for procedures lasting more than 5 to 10 minutes, a butterfly needle or catheter can be left in the vein, and small amounts of the veterinary medicinal product injected subsequently to maintain the required level and duration of anaesthesia. In most cases the average duration of recovery when using the veterinary medicinal product for maintenance will be longer than if using an inhalant gas as a maintenance agent.

#### 4.10 Overdose (symptoms, emergency procedures, antidotes), if necessary

Acute tolerance to overdose has been demonstrated up to 10 times the recommended dose of 2 mg/kg in the dog (i.e. up to 20 mg/kg), up to 5 times the recommended dose of 5 mg/kg in the cat (i.e. up to 25 mg/kg) and up to 3 times the recommended dose in the rabbit (i.e. up to 15 mg/kg). These excessive doses delivered over 60 seconds caused apnoea and a temporary decrease in mean arterial blood pressure. The decrease in blood pressure is not life threatening and is compensated for by changes in heart rate. These animals can be treated solely by intermittent positive pressure ventilation (if required) with either room air or, preferably, oxygen. Recovery is rapid with no residual effects.

#### 4.11 Withdrawal period(s)

Do not use in rabbits intended for human consumption.

## 5. PHARMACOLOGICAL or IMMUNOLOGICAL PROPERTIES

Pharmacotherapeutic group: Nervous system: other general anaesthetics, alfaxalone.

ATCvet code: QN01AX05.

### 5.1 Pharmacodynamic properties

Alfaxalone (3- $\alpha$ -hydroxy-5- $\alpha$ -pregnane-11,20-dione) is a neuroactive steroid molecule with properties of a general anaesthetic. The primary mechanism for the anaesthetic action of alfaxalone is modulation of neuronal cell membrane chloride ion transport, induced by binding of alfaxalone to GABA<sub>A</sub> cell surface receptors.

### 5.2 Pharmacokinetic particulars

In cats following a single intravenous dose of alfaxalone at 5 mg/kg bw, the mean plasma elimination half-life ( $t_{1/2}$ ) is approximately 45 minutes. Plasma clearance is 25 ml/kg/min. Volume of distribution is 1.8 L/kg.

In dogs following a single intravenous dose of alfaxalone at 2 mg/kg bw, the mean plasma elimination half-life ( $t_{1/2}$ ) is approximately 25 minutes. Plasma clearance is 59 ml/kg/min. Volume of distribution is 2.4 L/kg.

In rabbits following a single intravenous dose of alfaxalone at 5 mg/kg bw, the mean plasma elimination half-life ( $t_{1/2}$ ) is approximately 46 minutes. Plasma clearance is 56 ml/kg/min. Volume of distribution is 3.6 L/kg.

In dogs, cats and rabbits the elimination of alfaxalone demonstrates non-linear (dose-dependent) pharmacokinetics.

*In vitro* cat and dog hepatocyte studies show that alfaxalone experiences both Phase I (cytochrome P450 dependent) and Phase II (conjugation dependent) metabolism. Both cats and dogs form the same five (5) Phase I alfaxalone metabolites. The Phase II metabolites observed in cats are alfaxalone sulphate and alfaxalone glucuronide, while alfaxalone glucuronide is observed in the dog.

Alfaxalone metabolites are likely to be eliminated from the dog, cat and rabbit by the hepatic/faecal and renal routes, similar to other species.

## **6. PHARMACEUTICAL PARTICULARS**

### **6.1 List of excipients**

Hydroxypropylbetadex  
Sodium Chloride  
Disodium Phosphate  
Potassium Dihydrogen Phosphate  
Chlorocresol  
Benzethonium Chloride  
Ethanol  
Sodium Hydroxide (for pH adjustment)  
Hydrochloric Acid, Concentrated (for pH adjustment)  
Water for Injections

### **6.2 Major incompatibilities**

In the absence of compatibility studies, this veterinary medicinal product must not be mixed with other veterinary medicinal products.

### **6.3 Shelf-life**

Shelf life of the veterinary medicinal product as packaged for sale: 3 years.  
Shelf life after first opening the immediate packaging: 28 days.

### **6.4. Special precautions for storage**

Store below 25°C. Keep the container in the outer carton in order to protect from light.

### **6.5 Nature and composition of immediate packaging**

Cardboard box with one glass vial of 10 ml or 20 ml with a bromobutyl rubber stopper and aluminium cap. Not all pack sizes may be marketed.

### **6.6 Special precautions for the disposal of unused veterinary medicinal products or waste materials derived from the use of such products**

Any unused veterinary medicinal product or waste material derived from such veterinary medicinal product should be disposed of in accordance with local requirements.

**7. MARKETING AUTHORISATION HOLDER**

Zoetis Belgium S.A.  
2nd Floor, Building 10  
Cherrywood Business  
Park  
Loughlinstown  
Co. Dublin  
Ireland

**8. MARKETING AUTHORISATION NUMBER(S)**

VPA 10387/104/001

**9. DATE OF FIRST AUTHORISATION/RENEWAL OF THE AUTHORISATION**

27<sup>th</sup> April 2018

**10. DATE OF REVISION OF THE TEXT**