Reduces fear, stress and adverse behaviour[3]

Improves patient handling

Pre and post surgery analgesia

Prolongs and deepens analgesia

Predictable, reliable sedation

Butomidor™ Injection

Butorphanol (as tartrate) 10 mg/mL

A synthetic opioid agonist-antagonist analgesic

Analgesic, Sedative & Tranquillizer for Horses, Dogs & Cats

ausrichter

Ausrichter Pty Ltd
ABN 79 000 908 529
2/21 Chester Street, Camperdown NSW 2050
Telephone: (02) 9517 1166 Fax: (02) 9516 5810 Email: ausrichter@bigpond.com
Animal Health Products

Butomidor Injection

Mode of action

Butorphanol tartrate is a synthetic opioid agonist – antagonist analgesic and sedative. *At higher doses it is analgesic and at a lower dose it has a predictable sedative effect*. It has competitive antagonist activity at the μ-receptors , and agonist activity at κ- and σ-receptors. It produces its effect by binding to opioid receptors.[1]

The κ-receptors (kappa opioid receptors) mediate analgesia (primary spinal) with little depression of ventilation, sedation and miosis. Opioid agonists-antagonist drugs (butorphanol) act at the κ-receptors.[9]

The receptors bind with opioid agonists in a sterospecific manner. Upon attaching to the receptors the agonist induces a conformational change in the receptors which leads to a biochemical alteration in the neurons containing the receptors.[2]

Analgesia is produced by the activation of kappa and mu opioid receptors resulting in a unique pharmacological profile compared to other opioid agonists. Butorphanol can be administered before during or after medical or surgical procedures to reduce pain without fear of inducing significant cardiopulmonary effects.[5]

The potency of butorphanol is *approximately 5 times stronger that that of morphine*.[1]

Analgesia – Sedation – Tranquillization

Analgesia and sedation is essential for effective restraint, handling and treatment of animals particularly horses. Analgesia is important if fear, stress and adverse behavior is to be prevented. In horses butorphanol may be administered with or without acepromazine or α 2-agonists.[3] A combination of detomidine and butorphanol is a more compatible combination (similar length of action), with fewer unwanted side effects. *It is reported that horses that had previously still kicked accurately when deeply sedated with dormosedan alone were successfully sedated with a combination of detomidine and butorphanol.*[14]

Equine veterinarians in Australia in response to a survey ranked the reasons for the use of opioids in horses as:

- *Easier and safer handling of patient.*
- *Own safety.*
- *Safety of stable or lay staff*.[7]

Tranquillization, the twitch and forceful methods of restraint have largely been replaced by the use of detomidine and butorphanol and this has been a great advance as it provides a humane way of dealing with horses.[4] *(Rossdale)*

Synergism

Butorphanol may be administered concurrently with acepromazine or α 2-agonists for increased analgesia and improved sedation. α 2-agonists are synergistic with butorphanol resulting in good to excellent analgesia for standing medical and surgical procedures.[5] Butorphanol reduces the dose of xylazine or detomidine required to produce satisfactory sedation and analgesia. Reducing the dose of α 2-agonist decreases the potential for adverse cardio-respiratory side effects.

The analgesic potency of butorphanol and detomidine or detomidine alone was measured in twelve Warmblood horses in a randomized, blind crossover study. The nociceptive threshold was determined by using a constant current and pneumatic pressure model for somatic pain. In the buthorphanol and detomidine treatment group there was a significant difference ($p<0.05$) in the nociceptive threshold and the prolonged duration of anti-nociception [15 to 75 minutes]. *It is concluded that the addition of butorphanol to detomidine increases nociceptive thresholds to somatic pain and prolongs analgesic effect of detomidine in horses.*[15]

Horses – Clinical

Butorphanol may be administered before, during or after a medical or surgical procedure to reduce pain but without inducing significant cardiopulmonary effects. The α 2-agonists xylzazine and detomidine are synergistic with butorphanol resulting in good to excellent analgesia for standing procedures, colic and post partum pain the combination produces a marked reduction in the amount of injectable or inhaled anaesthesia required to maintain a surgical stage of anaesthesia.[5]

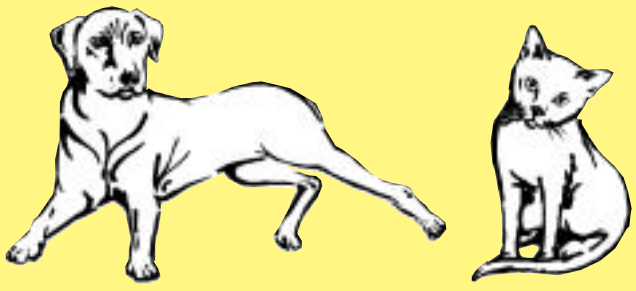
A combination of acepromazine with an opioid tends not to provide as much sedation but less ataxia, than combinations of α 2-agonists and an opioid. Most clinicians select a combination α 2-agonist with an opioid. In lengthy procedures it may be better to select a long acting α 2-agonist (detomidine, romifidine) in combination with a long acting opioid. The combination of detomidine (1.1 mg/kg) and butorphanol (0.1 mg/kg) has been found to produce reliable sedation and analgesia with no significant adverse effects on the cardiopulmonary systems.[6]

- Considerably improves patient handling and personal safety.
- Synergistic with α 2-agonists.
- Longer and stronger analgesia suitable for a wide range of procedures.
- Predictable sedation.
- Surgical and post surgery pain management.

Horses – Colic

Analgesics play an important role in treating equine colic. Effective analgesia is paramount in horses experiencing acute abdominal pain. It helps to prevent self-inflicted trauma, intestinal displacement and to assist in performing diagnostic procedures.[15]

Butorphanol is indicated for analgesia and sedation of horses with colic. It is an opioid agonist-antagonist noted for its visceral analgesic effects and ability to produce mild calming.[5] It may be given concurrently with α 2-agonists for additional analgesia with minimal compromise of the cardiovascular system.[13] Analgesia is not so long lasting as to mask serious life threatening symptoms which require immediate surgical intervention.



Dogs – Clinical

In dogs combining butorphanol with a low dose of medetomidine, produces a predictable deep sedation plus analgesia which is suitable for aggressive dogs and minor painful procedures. Medetomidine is given at 10 to 20 μg/kg with butorphanol at 0.1 mg/kg IM.[8]

A popular sedative combination is acetylpromazine plus butorphanol. In dogs this combination offers excellent restraint and sedation for radiographic procedures for upper gastrointestinal examinations. A study in six [6] healthy dogs confirmed this combination to be superior during UGIT examination to a combination of xylazine and butorphanol.[17]

- Pre-operative sedation and analgesia.
- Surgical and post surgical pain management.
- Improves handling and management of aggressive dogs.
- For minor painful procedures (with medetomidine).

Cats – Clinical

In female cats anaesthetized with butorphanol and propofol for ovariohystrectomy, butorphnol while not reducing the dose of propofol, produced increased analgesia during surgical intervention.[10]

A study in cats indicated butorphanol administered at (0.08-0.8 mg/kg) decreased the need for potent inhalant anaesthetics. It could be potentially beneficial in combination with inhalants [anaesthetics].[11]

Butorphanol was administered at 0.1 mg/kg IV or 0.4-0.8 mg/kg SQ for pain in cats. Butorphanol provides effective visceral analgesic at low doses for as long as six hours in cats.[12]

- Increases analgesia during surgical intervention.
- Reduces the volume of inhalation anaesthetic agent.
- Strong analgesia for visceral pain.

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Abridged Prescribing Information

CONTROLLED DRUG
POSSESSION WITHOUT AUTHORITY ILLEGAL
KEEP OUT OF REACH OF CHILDREN
FOR ANIMAL TREATMENT ONLY

Butomidor™ Injection

Each mL contains:
Butorphanol base (as tartrate) 10 mg/mL

DESCRIPTION

BUTOMIDOR (butorphanol tartrate) is a totally synthetic, centrally acting, narcotic agonist-antagonist analgesic with potent antitussive activity.

Equine Pharmacology
In ponies, butorphanol given intramuscularly at a dosage of 0.22 mg/kg, was shown to alleviate experimentally induced visceral pain for about 4 hours. In horses, intravenous dosages of butorphanol ranging from 0.05 to 0.4 mg/kg were shown to be effective in alleviating visceral and superficial pain for at least 4 hours.

INDICATIONS

Horse
As an analgesic: BUTOMIDOR is a centrally acting analgesic and may be used for the relief of pain in adult horses and yearlings. BUTOMIDOR alleviates abdominal pain associated with torsion, impaction, intussusception, spasmodic, tympanic and postpartum pain.

Dog and Cat
As an analgesic: BUTOMIDOR is used for the relief of moderate to severe pain in dogs and cats. BUTOMIDOR can provide suitable analgesia after a variety of surgical procedures eg orthopaedic and soft tissue surgery. Clinical studies have shown that if administered pre-operatively, butorphanol will reduce the amount of analgesia required post-operatively.

As a sedative: In cats, sedation does not occur with BUTOMIDOR alone, but can occur in dogs with BUTOMIDOR alone. In both species, profound sedation is achieved using BUTOMIDOR in conjunction with medetomidine hydrochloride, making it suitable for radiography, fracture examination or casting, dematting, ear cleaning, wound management, anal gland flushing, and other minor procedures.

As a pre-anaesthetic: Pre-anaesthetic use of BUTOMIDOR in dogs has resulted in a dose-related reduction in the dose of thiopentone sodium needed to induce anaesthesia, which will also reduce the risk of anaesthetic respiratory depression. Pre-anaesthetic use in cats provides improved analgesia. Intravenous induction agents should be given to effect.

As an anaesthetic: BUTOMIDOR may be used in combination with medetomidine hydrochloride and ketamine hydrochloride as a triple anaesthetic.

DIRECTIONS FOR USE

CONTRA-INDICATIONS
Before using any combinations consult the contra-indications which appear on the other products' data sheets.

Horse
BUTOMIDOR should not be administered to horses with a history of liver disease.

There are no well-controlled studies using butorphanol in breeding horses, weanlings or foals. Therefore the drug should not be used in these groups.

When used in combination with detomidine hydrochloride, do not use in pregnant animals or in animals suffering from colic. Routine cardiac auscultation should be performed prior to use of this combination.
Do not use the combination in horses with a pre-existing cardiac dysrhythmia or bradycardia.

Dog
Do not use in dogs with a history of liver disease.

PRECAUTION

BUTOMIDOR should not be mixed with any other product in the same syringe.

BUTOMIDOR is a potent analgesic and should be used with caution with other sedative or analgesic drugs as these are likely to produce additive effects.

ADVERSE EFFECTS

Acute Equine Studies
Rapid intravenous administration of butorphanol at a dosage of 2.0 mg/kg (20 times the recommended dosage) to a previously unmedicated horse resulted in a brief episode of inability to stand, muscle fasciculation, a convulsive seizure of 6 seconds duration and recovery within 3 minutes. The same dosage administered after 10 successive daily 1.0 mg/kg dosages of butorphanol resulted in only transient sedative effects. During the 10 day course of administration at 1.0 mg/kg (10 times the recommended use level) in two horses, the only detectable drug effects were transient behavioural changes typical of narcotic agonist activity. These included muscle fasciculation about the head and neck, dysphoria, lateral nystagmus, ataxia and salivation. Repeated administration of butorphanol at 1.0 mg/kg (10 times the recommended dose) every four hours for 48 hours caused constipation in one of two horses.

Dog
If respiratory depression occurs, nalorphine may be used as an antidote. (NB Nalorphine is a prescription human medicine, not a licensed animal remedy). Transient ataxia, anorexia and diarrhoea have been reported as occurring rarely.

When using butorphanol as a pre-anaesthetic the use of an anticholinergic such as atropine will protect the heart against possible narcotic induced bradycardia.

Cat
If respiratory depression occurs, nalorphine may be used as an antidote.

Marked sedation does not occur in cats when butorphanol is used as a sole agent. Mydriasis is likely to occur.

Reproduction
Studies performed in mice and rabbits revealed no evidence of impaired fertility or harm to the foetus due to butorphanol tartrate. In the female rat, parenteral administration was associated with increased nervousness and decreased care for the newborn, resulting in a decreased survival rate of the newborn. The nervousness was seen only in the rat species.

DOSAGE AND ADMINISTRATION

Vial should be discarded 28 days after opening. Protect from light.

Horse
The recommended dosage in the horse is 1 mL BUTOMIDOR per 100 kg bodyweight by intravenous injection. This is equivalent to 0.1 mg of butorphanol per kg bodyweight. Analgesic effects are seen within 15 minutes of injection and persist for about 4 hours. The dose may be repeated as required. BUTOMIDOR use should not exceed 48 hours in any one treatment episode.

Dog
When administering intravenously, inject slowly; do not inject as a bolus.

For dogs of 10 kg bodyweight or less, administration by insulin syringe is recommended to ensure accurate dosing. Great care should be taken when administering BUTOMIDOR to animals weighing under 5 kg as low volumes are used.

For analgesia: Administer by intravenous, intramuscular or subcutaneous injection routes using aseptic technique.

Dose rate: 0.2-0.3 mL per 10 kg bodyweight (equivalent to 0.2-0.3 mg of butorphanol per kg bodyweight). BUTOMIDOR should be administered before terminating anaesthesia to provide analgesia in the recovery phase. Analgesic effects are seen within 15 minutes. For continuous analgesia the dose may be repeated as required.

For use as a pre-anaesthetic: Used as a pre-anaesthetic, the BUTOMIDOR dose should be reduced to 0.1-0.2 mL per 10 kg (0.1-0.2 mg butorphanol per kg), given 15 minutes prior to induction. When using BUTOMIDOR as a pre-anaesthetic, the use of an anticholinergic such as atropine will protect the heart against possible narcotic induced bradycardia.

Cat
Cats should be weighed to ensure that the correct dose is calculated. For cats of 10 kg or less bodyweight, administration by insulin syringe is recommended to ensure accurate dosing. Great care should be taken when administering BUTOMIDOR to animals weighing under 5 kg as low volumes are used.

For pre-operative analgesia

Dose rate: 0.2 mL BUTOMIDOR per 5 kg bodyweight (equivalent to 0.4 mg of butorphanol per kg bodyweight) should be administered either by subcutaneous or intramuscular injection. Clinical studies have shown that administering the butorphanol dose 5 minutes prior to induction with either acepromazine/ketamine or xylazine/ketamine will provide analgesia when surgery commences. The arousal time will not be significantly altered. With intravenous induction agents, BUTOMIDOR should be administered 15-30 minutes prior to the administration of the anaesthetic.

For post-operative analgesia

Dose rate: 0.2 mL BUTOMIDOR per 5 kg bodyweight (equivalent to 0.4 mg of butorphanol per kg bodyweight) should be administered either by subcutaneous or intramuscular injection, or 0.05 mL per 5 kg body weight by intravenous injection, 15 minutes prior to recovery.

MEAT WITHHOLDING PERIOD (HORSES): DO NOT USE less than 28 days before slaughter for human consumption.

DISPOSAL
Dispose of empty container by wrapping with paper and putting in garbage. Discarded needles/sharps should immediately be placed in a designated and appropriately labelled "sharps" container.

STORAGE
Store below 25°C (air conditioning). Protect from light.

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Distributed by:
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Ausrichter Pty Ltd ABN 79 000 908 529
Unit 2-21 Chester Street, Camperdown NSW 2050
Tel (02) 9517 1166 Fax (02) 9516 5810
Email ausrichter@bigpond.com

Manufactured by:
Richter Pharma, Wels, Austria