

Butorphanol

SCHEDULING STATUS: S6

CURRENTLY COMPOUNDED FORMULATIONS:

Active ingredient(s)	Injectable	Oral equine paste	Oral carnivore paste	Orals for exotics	Oral solution/suspension	Topical treatment	Shampoo	Capsules/Tablets	Oral powder
Butorphanol tartrate	✓				✓				

REGISTERED PRODUCT/ TRADE NAME: Dolorex

PHARMACOLOGICAL CLASSIFICATION: Opiate partial agonist

PHARMACOLOGICAL ACTION: Its agonist activity is thought to occur primarily at the kappa and sigma receptors and the analgesic actions at sites in the limbic system. Butorphanol is considered to be, on a weight basis, 4-7 times as potent an analgesic as morphine.^[1]

Butorphanol is an opioid with both antagonistic and agonistic effects. It is a mu-receptor antagonist and has the ability to reverse the effects of the more potent opioids in a similar way to that of nalorphine.

INDICATIONS: Approved indication for dogs is "...for the relief of chronic non-productive cough associated with tracheobronchitis, tracheitis, tonsillitis, laryngitis and pharyngitis originating from inflammatory conditions of the upper respiratory tract". It is also used in practice in both dogs and cats as a preanesthetic medication, analgesic, and as an antiemetic prior to cisplatin treatment (although not very effective in cats for this indication). Compared with other opiate analgesics, butorphanol is not very useful in small animals (particularly dogs) for treating pain and has to be dosed frequently.

The approved indication for horses is "...for the relief of pain associated with colic in adult horses and yearlings". It has also been used clinically as an analgesic in cattle.^[1]

Butorphanol is used as a post-operative analgesic in various species including cats and other carnivores. It is more commonly used in drug mixtures for the immobilization of white and black rhino, hippo, lion and wild dog.^[2]

DOSAGE AND DIRECTIONS FOR USE:

DOGS:

As an antitussive: 0.055-0.11 mg/kg SC q6 – 12h; treatment should not normally be required for longer than 7 days; or 0.55 mg/kg PO q6 – 12h; may increase dose to 1.1 mg/kg PO q6 – 12h; treatment should not normally be required for longer than 7 days.^[1]

As an analgesic: 0.1-0.5 mg/kg IV, IM, SC; provides only mild to moderate analgesia (good visceral analgesia); duration of sedative action 2 – 4 hours, but analgesic action may be 1 hour or less (Perkowski 2006b).^[1]

As an analgesic: 0.5-1 mg/kg PO q6 – 12h (Hardie 2000).^[1]

As a preanaesthetic: 0.05 mg/kg IV or 0.4 mg/kg SC, IM (Morgan 1988).^[1]

CATS:

As an analgesic: 0.1-1 mg/kg IM, IV or SC q1 – 3h (Hendrix and Hansen 2000).^[1]

As an analgesic: 0.5 - 1 mg/kg PO q6 – 8h (Hardie 2000).^[1]

As a preanaesthetic: 0.2-0.4 mg/kg IM (with glycopyrrolate 0.01 mg/kg IM and ketamine 4 - 10 mg/kg IM) (Reidesel).^[1]

CATTLE:

As an analgesic: 0.02 - 0.25 mg/kg IV, SQ; 20 - 30 mg (total dose) IV for an adult animal. Duration of effect is 4 hours. An appropriate withdrawal period is 72 hours for milk, and 4 days for meat. (Walz 2006b).^[1]

HORSES:

As an analgesic: 0.1 mg/kg IV q3 - 4h; not to exceed 48 hours.^[1]

For moderate to marked abdominal pain: 0.01-0.02 mg/kg IV alone or in combination with xylazine (0.02 - 0.1 mg/kg IM) (Moore 1999).^[1]

For colic pain: 5-10 mg (total dose for 450-500 kg horse) IV combined with xylazine 100-200 mg (total dose) (Zimmel 2003).^[1]

Foals: 0.1-0.2 mg/kg IV or IM (Robertson 2003).^[1]

As preanaesthetic, outpatient surgery or chemical restraint: 0.01-0.04 mg/kg IV (with xylazine 0.1-0.5 mg/kg IV) (Orsini 1988)^[1]

As an antitussive: 0.02 mg/kg IM two to three times daily (Orsini 1988).^[1]

WILDLIFE:^[2]

Aardwolf: 0.15 mg/kg

African clawless otter: 0.2 mg/kg

African wild cat: 0.15 mg/kg

Black-backed jackal: 0.15 mg/kg

Brown hyena: 0.15 mg/kg

Bushpig: 0.1-0.2 mg/kg

Caracal: 0.15 mg/kg

Cheetah male/female: 0.2 mg/kg

Civet: 0.2 mg/kg

Grey duiker ram/ewe: 0.15 mg/kg

Hippopotamus bull/cow: 0.1-0.2 mg/kg (up to 150 mg for an adult male)

Honey badger: 0.2 mg/kg

Impala ram: 16 mg

Impala ewe: 15 mg

Klipspringer ram/ewe: 0.15 mg/kg

Large- and small-spotted genet: 0.2 mg/kg

Leopard male/female: 0.3 mg/kg (total dose 15 mg for 50 kg)

Lion male/female: 0.2-0.3 mg/kg (total dose 20-30 mg)

Mini-antelope ram/ewe: 0.15 mg/kg

Mongoose spp.: 0.2 mg/kg

Oribi ram/ewe: 0.15 mg/kg

Serval: 0.15 mg/kg

Side-striped jackal: 0.15 mg/kg

Small spotted cat: 0.15 mg/kg

Spotted hyena: 0.15 mg/kg

Steenbok ram/ewe: 0.15 mg/kg

Striped polecat: 0.2 mg/kg

Warthog: 0.1-0.2 mg/kg

White rhino bull/cow: etorphine 2-4 mg in combination with butorphanol at 1 mg etorphine:15-20 mg butorphanol

White rhino captive: etorphine 0.5-3 mg in combination with butorphanol at a ratio of 10-15 mg/mg of etorphine

Wild dog: 0.15 mg/kg

WARNINGS/ PRECAUTIONS/ CONTRA-INDICATIONS:

- All opiates should be used with caution in patients with hypothyroidism, severe renal insufficiency, adrenocortical insufficiency (Addison's), and in geriatric or severely debilitated patients. Like other opiates, butorphanol must be used with extreme caution in patients with head trauma, increased CSF pressure or other CNS dysfunction (e.g., coma).^[1]

- Butorphanol should not be used in dogs with a history of liver disease and, because of its effects on suppressing cough, it should not be used in conditions of the lower respiratory tract associated with copious mucous production.^[1]
- Adverse effects reported in dogs/cats include sedation, excitement, respiratory depression, ataxia, anorexia or diarrhoea (rarely).^[1]
- Adverse effects seen in horses (at usual doses) may include a transient ataxia and sedation, but excitement has been noted as well.^[1]

REFERENCES:

1. Plumb's Veterinary Drug Handbook, Sixth edition by Donald C. Plumb
2. Chemical and Physical Restraint of Wild Animals, Edited by Michael D. Kock, David Meltzer and Richard Burroughs