

Classification of anesthetic drugs

Drug family	Drug	Receptor	Main indication	CV side effects	Others
Anticholinergics	atropine, (glycopyrrolate)	muscarine antagonist	Bradycardia (with hypotension)	AV blocks, more bradycardia	Routine use for premedication is not recommended
α_2 agonists	dexmedetomidine, medetomidine, xylazine	α_2 agonist	Strong sedative	Vasoconstriction and reflex bradycardia, low cardiac output	Not recommended for most sick patients
Phenothiazines	acepromazine	α_1 , histamine, dopamine, serotonin antagonist	Mild sedative	Vasodilation and hypotension	Not recommended for hemodynamically unstable patients
Benzodiazepines	midazolam, (diazepam)	GABA agonist	Muscle relaxant and anti seizure effects. The sedative effects are unreliable in dogs and cats.	Minimal	Suitable for most sick patients (except for severe liver diseases)
Opioids	methadone	Full mu agonist, NMDA antagonist	Strong analgesia (4 hours)	No direct effects on circulation. May cause bradycardia because of increased Psy and decreased Sy activity, which can be treated with atropine.	Can be given IV, IM, SC, doesn't cause histamine release, vomiting is rare
Opioids	morphine	Full mu agonist	Strong analgesia (4 hours)	Similar to those of methadone but may also cause histamine release	Can be given IM and SC. IV max 0.2 mg/kg. Larger doses may cause significant histamine release. Vomiting is common.
Opioids	fentanyl	Full mu agonist	Strong analgesia (15-20 min)	Similar to methadone	Only IV. Duration of effect is 15-20 min
Opioids	buprenorphine	Partial mu agonist	Weaker analgesia (6-8 hours)	Similar to methadone but bradycardia may be less	
Opioids	butrophanol	Partial mu and kappa agonist	Weak analgesia (1 hour)	Similar to methadone but bradycardia may be less	Weak analgesic. Not suitable for surgeries.
Injectable anesthetics	propofol	GABA agonist	Induction and maintenance of general anesthesia	Vasodilation and hypotension	Most common agent for anesthetic induction. May cause hemoglobin toxicity in cats. Has been associated with wound infection.
Injectable anesthetics	alfaxalone	GABA agonist	Induction and maintenance of general anesthesia	Similar to propofol	A good alternative of propofol. Can be given IM or IV. Not toxic to Hb and doesn't cause wound infection.
Injectable anesthetics	etomidate	GABA agonist	Induction of general anesthesia (maintenance is contraindicated)	Minimal at low clinical doses	Excellent choice for hemodynamically unstable patients.
Injectable anesthetics	ketamine	NMDA antagonist	Induction and maintenance of general anesthesia. Can also be given as part of IM premedication.	Direct effect is negative inotrop, indirect effect is via catecholamine release	Most common induction agent for horses
Inhalational anesthetics	isoflurane, sevoflurane	GABA agonist	Maintenance (sometimes induction) of general anesthesia	Vasodilation and hypotension	Most common agents for anesthetic maintenance