



Australian Government
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DETECTION TIMES FOR EQUINE MEDICATIONS

Data from *The Pharmacokinetics of Equine Medications*
research report (RIRDC Pub. No. 11/117)



IMPORTANT INFORMATION AND DISCLAIMER

This information is based on a series of studies in which each drug was administered to a limited number of horses. The data should not be regarded as absolute for every horse to which these substances are administered, nor does it apply to routes of administration or dosages other than those specified. Formulation differences exist between drugs of different companies and may also affect the pharmacokinetics of a drug. Screening limits are those approved by the Australian Racing Board as of July 2013.

You must not rely on any information contained in this fact sheet without taking specialist advice relevant to your circumstances. While reasonable care has been taken in preparing this fact sheet to ensure that information is true and correct, the Commonwealth of Australia gives no assurance as to its accuracy. The Commonwealth of Australia, the Rural Industries Research and Development Corporation (RIRDC), the authors (ETRA) or contributors expressly disclaim, to the maximum extent permitted by law, all responsibility and liability to any person, arising directly or indirectly from any act or omission, or for any consequences of any such act of omission, made in reliance on the contents of this publication, whether or not caused by any negligence on the part of the Commonwealth of Australia, RIRDC, the authors or contributors. The Commonwealth of Australia does not necessarily endorse the views in this publication.

RIRDC and ETRA are of the view that you should not administer a therapeutic drug to a horse without guidance of a relevant specialist.

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ACEPROMAZINE

Use in competition horses

Period of detection in urine (including metabolites, isomers and/or artefacts):

3 DAYS, based on a screening limit in urine of 10 ng/mL of the 2-(1-hydroxyethyl) promazine sulfoxide metabolite.

Notes

- For competition horses, forensic tests may be performed using plasma or urine to measure the parent drug, metabolites, isomers and/or artefacts;
- The excretion rate of acepromazine was found to show marked variation between horses;
- Different formulations of this compound from different manufacturers may be excreted differently;
- The **detection time** specified here is provided for the guidance of veterinarians to estimate an appropriate **withholding time**, based on the particular circumstances of drug administration and the addition of a suitable safety margin.

Preparation administered

ACP 10 injection (Delvet Pty Ltd)

Active ingredients: acepromazine maleate 13.5 mg/mL (equivalent to 10 mg/mL acepromazine)

Other proprietary names

Acemav Injection; Acepril 10

Classification

Phenothiazine tranquilizer (S4)

Route of administration

Intravenous (single administration)

Dose

3 mL/horse (equivalent to 0.045 to 0.063 mg/kg)

Number of horses studied

12 (median body weight 551 kg, range 474 to 670 kg)

BUSCOPAN COMPOSITUM

Use in competition horses

Period of detection in urine (including metabolites, isomers and/or artefacts):

3 DAYS, based on a screening limit in urine of 1000 ng/mL of the 4-methylaminoantipyrine metabolite of dipyrone, and a screening limit in urine of 25 ng/mL for hyoscine N- butylbromide (or N-butylscopolammonium).

Notes

- For competition horses, forensic tests may be performed using plasma or urine to measure the parent drug, metabolites, isomers and/or artefacts;
- Different formulations of this compound from different manufacturers may be excreted differently;
- The **detection time** specified here is provided for the guidance of veterinarians to estimate an appropriate **withholding time**, based on the particular circumstances of drug administration and the addition of a suitable safety margin.

Preparation administered

Buscopan Compositum (Boehringer Ingelheim Pty Ltd)

Active ingredients: hyoscine N-butylbromide (N-butylhyoscine bromide; scopolamine N-butylbromide; N-butylscopolamine bromide) 4 mg/mL; dipyrone 500 mg/mL

Other proprietary names

Ilium Spasmogesic

Classification

Hyoscine N-butylbromide: anticholinergic spasmolytic agent

Dipyrone: non-steroidal anti-inflammatory drug (NSAID) (S4)

Route of administration

Intravenous (single administration)

Dose

30 mL/horse

- equivalent to 0.2 to 0.27 mg/kg hyoscine N-butylbromide and
- 26 to 33 mg/kg dipyrone

Number of horses studied

12 (median body weight 514 kg, range 448 to 588 kg)

BUTORPHANOL

Use in competition horses

Period of detection in urine (including metabolites, isomers and/or artefacts):

4 DAYS

Notes

- For competition horses, forensic tests may be performed using plasma or urine to measure the parent drug, metabolites, isomers and/or artefacts;
- Different formulations of this compound from different manufacturers may be excreted differently;
- The **detection time** specified here is provided for the guidance of veterinarians to estimate an appropriate **withholding time**, based on the particular circumstances of drug administration and the addition of a suitable safety margin.

Preparation administered

Torbugesic (Fort Dodge)

Active ingredients: butorphanol tartrate 10 mg/mL (equivalent to 6.9 mg/mL butorphanol)

Other proprietary names

Butomidor Injection; Dolorex; Butorgesic Injection

Classification

Narcotic analgesic (S8)

Route of administration

Intravenous (single administration)

Dose

2 mL/horse (equivalent to 0.03 to 0.05 mg/kg)

Number of horses studied

12 (median body weight 497 kg, range 430 to 590 kg)

DETOMIDINE

Use in competition horses

Period of detection in urine (including metabolites, isomers and/or artefacts):

48 HOURS, based on a screening limit in urine of 2 ng/mL for the 3'-hydroxydetomidine metabolite.

Notes

- For competition horses, forensic tests may be performed using plasma or urine to measure the parent drug, metabolites, isomers and/or artefacts;
- Different formulations of this compound from different manufacturers may be excreted differently;
- The **detection time** specified here is provided for the guidance of veterinarians to estimate an appropriate **withholding time**, based on the particular circumstances of drug administration and the addition of a suitable safety margin.

Preparation administered

Dormosedan (Novartis Animal Health Australasia Pty Ltd)

Active ingredients: detomidine hydrochloride 10 mg/mL (equivalent to 8.4 mg/mL detomidine)

Other proprietary names

Calmant Injection; Detomo Vet; Dozadine Injection; Equisedan Vet Solution for Injection

Classification

α_2 -adrenoreceptor agonist (S4)

Route of administration

Intravenous (single administration)

Dose

2.1 to 2.8 mL/horse (equivalent to 0.04 mg/kg)

Number of horses studied

12 (median body weight 599.5 kg, range 536 to 690 kg)

DEXAMETHASONE

Use in competition horses

Period of detection in urine (including metabolites, isomers and/or artefacts):

3 DAYS

Notes

- For competition horses, forensic tests may be performed using plasma or urine to measure the parent drug, metabolites, isomers and/or artefacts;
- Different formulations of this compound from different manufacturers may be excreted differently;
- The **detection time** specified here provided for the guidance of veterinarians to estimate an appropriate **withholding time**, based on the particular circumstances of drug administration and the addition of a suitable safety margin.

Preparation administered

Ilium Dexapent (Troy Laboratories)

Active ingredients: dexamethasone sodium phosphate 5 mg/mL
(equivalent to 3.8 mg/mL dexamethasone)

Other proprietary names

Dexone-5, Dexol-5, Dexaphos 5

Classification

Corticosteroid (S4)

Route of administration

Intravenous (single administration)

Dose

5 to 7.5 mL/horse (equivalent to 0.06 mg/kg)

Number of horses studied

11 (median body weight 538 kg, range 423 to 620 kg)

FLUNIXIN

Use in competition horses

Period of detection in urine (including metabolites, isomers and/or artefacts):

3 DAYS, based on a screening limit in urine of 100 ng/mL for flunixin.

Notes

- For competition horses, forensic tests may be performed using plasma or urine to measure the parent drug, metabolites, isomers and/or artefacts;
- Different formulations of this compound from different manufacturers may be excreted differently;
- The **detection time** specified here is provided for the guidance of veterinarians to estimate an appropriate **withholding time**, based on the particular circumstances of drug administration and the addition of a suitable safety margin.

Preparation administered

Flunixin (Bomac)

Active ingredients: flunixin meglumine 50 mg/mL (equivalent to 30.1 mg/mL flunixin)

Other proprietary names

Flumav; Ilium Flunixil; Flunixon; Fluximine Injection, Finadyne Solution

Classification

Non-steroidal anti-inflammatory drug (NSAID) (S4)

Route of administration

Intravenous (single administration)

Dose

9 to 11.5 mL/horse (equivalent to 1.1 mg/kg)

Number of horses studied

12 (median body weight 486 kg, range 409 to 526 kg)

KETOPROFEN

Use in competition horses

Period of detection in urine (including metabolites, isomers and/or artefacts):

3 DAYS, based on a screening limit in urine of 100 ng/mL for ketoprofen.

Notes

- For competition horses, forensic tests may be performed using plasma or urine to measure the parent drug, metabolites, isomers and/or artefacts;
- Different formulations of this compound from different manufacturers may be excreted differently;
- The **detection time** specified here is provided for the guidance of veterinarians to estimate an appropriate **withholding time**, based on the particular circumstances of drug administration and the addition of a suitable safety margin.

Preparation administered

Ileum Ketoprofen Injection (Troy Laboratories)

Active ingredients: ketoprofen 100 mg/mL

Other proprietary names

Ketoprofen Injection; Key Injection

Classification

Non-steroidal anti-inflammatory drug (NSAID) (S4)

Route of administration

Intravenous (single administration)

Dose

10 mL/horse (equivalent to 1.76 to 2.29 mg/kg)

Number of horses studied

12 (median body weight 480 kg, range 437 to 567 kg)

LIGNOCAINE

Use in competition horses

Period of detection in urine (including metabolites, isomers and/or artefacts):

3 DAYS, based on a screening limit in urine of 10 ng/mL for the 3'-hydroxylignocaine metabolite.

Notes

- For competition horses, forensic tests may be performed using plasma or urine to measure the parent drug, metabolites, isomers and/or artefacts;
- Different formulations of this compound from different manufacturers may be excreted differently;
- The **detection time** specified here is provided for the guidance of veterinarians to estimate an appropriate **withholding time**, based on the particular circumstances of drug administration and the addition of a suitable safety margin.

Preparation administered

Ilium Lignocaine 20 (Troy Laboratories)

Active ingredients: lignocaine hydrochloride (lidocaine hydrochloride) 20 mg/mL (equivalent to 17.3 mg/mL lignocaine)

Other proprietary names

Lignocaine 20; Lignomav

Classification

Local anaesthetic (S4)

Route of administration

Subcutaneous (single administration)

Dose

17 to 22.2 mL/horse (equivalent to 0.8 mg/kg)

Number of horses studied

12 (median body weight 502 kg, range 424 to 554 kg)

MEPIVACAINE

Use in competition horses

Period of detection in urine (including metabolites, isomers and/or artefacts):

MAY EXCEED 4 DAYS, based on a screening limit in urine of 10 ng/mL for the 3'-hydroxymepivacaine metabolite.

Notes

- In this study the pharmacokinetics of mepivacaine were non-linear and excretion times were highly variable, therefore, mepivacaine is NOT recommended for use close to competition;
- For competition horses, forensic tests may be performed using plasma or urine to measure the parent drug, metabolites, isomers and/or artefacts;
- Different formulations of this compound from different manufacturers may be excreted differently;
- The **detection time** specified here is provided for the guidance of veterinarians to estimate an appropriate **withholding time**, based on the particular circumstances of drug administration and the addition of a suitable safety margin.

Preparation administered

Mepivacaine (Nature Vet)

Active ingredients: mepivacaine hydrochloride 20 mg/mL
(equivalent to 17.4 mg/mL mepivacaine)

Other proprietary names

Vetacaine

Classification

Local anaesthetic (S4)

Route of administration

Subcutaneous (single administration)

Dose

20 mL/horse (equivalent to 0.68 to 0.99 mg/kg)

Number of horses studied

12 (median body weight 488 kg, range 405 to 593 kg)

METHYLPREDNISOLONE

Use in competition horses

Period of detection in urine (including metabolites, isomers and/or artefacts):

GREATER THAN 45 DAYS in some horses based on the screening of urine for methylprednisolone.

Notes

- The excretion of this depot compound is prolonged and erratic, therefore this preparation is NOT recommended for use close to competition;
- For competition horses, forensic tests may be performed using plasma or urine to measure the parent drug, metabolites, isomers and/or artefacts;
- Different formulations of this compound from different manufacturers may be excreted differently;
- The **detection time** specified here is provided for the guidance of veterinarians to estimate an appropriate **withholding time**, based on the particular circumstances of drug administration and the addition of a suitable safety margin.

Preparation administered

Depo-Medrol (Pfizer Animal Health)

Active ingredients: methylprednisolone acetate (MPA) 20 mg/mL

Other proprietary names

Ilium Depredil

Classification

Corticosteroid (S4)

Route of administration

Intramuscular (single administration)

Dose

10 mL/horse (equivalent to 0.39 to 0.47 mg/kg)

Number of horses studied

12 (median body weight 453.5 kg, range 424 to 515 kg)

PHENYLBUTAZONE

Use in competition horses

Period of detection in urine (including metabolites, isomers and/or artefacts):

5 DAYS, based on a screening limit in urine of 100 ng/mL for phenylbutazone.

Notes

- For competition horses, forensic tests may be performed using plasma or urine to measure the parent drug, metabolites, isomers and/or artefacts;
- Different formulations of this compound from different manufacturers may be excreted differently;
- The **detection time** specified here is provided for the guidance of veterinarians to estimate an appropriate **withholding time**, based on the particular circumstances of drug administration and the addition of a suitable safety margin.

Preparation administered

Bute Paste (Ranvet)

Active ingredients: phenylbutazone 200 mg/mL

Other proprietary names

Butin Antiinflammatory Oral Paste; P-Butazone Paste

Classification

Non-steroidal anti-inflammatory drug (NSAID) (S4)

Route of administration

Oral (6 day course)

Dose

10 mL twice on the first day, then 5 mL twice daily for 4 consecutive days, then 5 mL once on day 6
(equivalent to 3.1 to 3.9 mg/kg twice on the first day, then 1.5 to 2.0 mg/kg twice daily for 4 days, then 1.5 to 2.0 mg/kg once on day 6)

Number of horses studied

12 (median body weight 562 kg, range 508 to 654 kg)

PREDNISOLONE

Use in competition horses

Period of detection in urine (including metabolites, isomers and/or artefacts):

48 HOURS, based on the screening of urine for prednisolone.

Notes

- For competition horses, forensic tests may be performed using plasma or urine to measure the parent drug, metabolites, isomers and/or artefacts;
- Different formulations of this compound from different manufacturers may be excreted differently;
- The **detection time** specified here is provided for the guidance of veterinarians to estimate an appropriate **withholding time**, based on the particular circumstances of drug administration and the addition of a suitable safety margin.

Preparation administered

Preddy Granules (Vetsearch International)

Active ingredients: prednisolone 200 mg/5g sachet

Other proprietary names

Macrolone granules

Classification

Corticosteroid (S4)

Route of administration

Oral (5 day course)

Dose

1 g/day for 5 consecutive days (equivalent to 1.72 to 2.28 mg/kg/day)

Number of horses studied

12 (median body weight 505 kg, range 439 to 583 kg)

PRILOCAINE

Use in competition horses

Period of detection in urine (including metabolites, isomers and/or artefacts):

48 HOURS, based on the screening of urine for prilocaine and its metabolites.

Notes

- For competition horses, forensic tests may be performed using plasma or urine to measure the parent drug, metabolites, isomers and/or artefacts;
- Different formulations of this compound from different manufacturers may be excreted differently;
- The **detection time** specified here is provided for the guidance of veterinarians to estimate an appropriate **withholding time**, based on the particular circumstances of drug administration and the addition of a suitable safety margin.

Preparation administered

Prilocaine 2% (Delvet Pty Ltd)

Active ingredients: prilocaine hydrochloride 20 mg/mL (equivalent to 17.2 mg/mL prilocaine)

Other proprietary names

Prilocaine Injection

Classification

Local anaesthetic (S4)

Route of administration

Subcutaneous (single administration)

Dose

20 mL/horse (equivalent to 0.60 to 0.84 mg/kg)

Number of horses studied

12 (median body weight 551 kg, range 478 to 666 kg)

PROCAINE PENICILLIN

Use in competition horses

Period of detection of procaine in urine (including metabolites, isomers and/or artefacts):

9 DAYS after the single dose.

14 DAYS* after the completion of the 6-day course.

Notes

- *The clearance of procaine after multiple intramuscular injections of procaine penicillin is likely to be **prolonged and unpredictable**
- For competition horses, forensic tests may be performed using plasma or urine to measure the parent drug, metabolites, isomers and/or artefacts;
- Different formulations of this compound from different manufacturers may be excreted differently;
- The **detection time** specified here provided for the guidance of veterinarians to estimate an appropriate **withholding time**, based on the particular circumstances of drug administration and the addition of a suitable safety margin.
- Note that detection times for the repeated administration study showed high variability among horses. Therefore, extreme **caution** is recommended when estimating withholding times.

Preparation administered

Ilium Propercillin (Troy Laboratories)

Active ingredients: procaine penicillin 300 mg/mL (equivalent to 120 mg/mL procaine)

Other proprietary names

Bomacillin; Norocillin; Depocillin

Classification

Antibiotic (S4)

Route of administration

Intramuscular

Dose

Single administration (Study 1): 20 to 25 mL per horse (equivalent to 12 mg/kg)

Repeated administration (Study 2): 19.5 to 24 mL per horse (equivalent to 12 mg/kg/dose) provided as 10 doses as follows - once on day 1, twice per day on days 2 to 5, then once on day 6

Number of horses studied

Single administration: 12
(median body weight 545 kg, range 492 to 628 kg)

Repeated administration: 12
(median body weight 544 kg, range 486 to 604 kg)

Equine Therapeutics Research Australia (ETRA)

RIRDC has collaborated with several key industry bodies to sponsor a research consortium – *Equine Therapeutics Research Australia* (ETRA) – to provide more accurate information about the pharmacokinetics of equine medications. Four Universities, four Australian horseracing forensic laboratories and *Equine Veterinarians Australia* together identified the 18 most important drugs. After administration to a number of horses, the concentration of these drugs was measured in blood plasma and urine. The information in this fact sheet is based on this research and is provided for the guidance of equine veterinarians.

Acknowledgement

The ETRA group acknowledges the generous financial support of RIRDC and their industry sponsors, which made this research possible.

Screening limits

Along with most other international racing jurisdictions, the Australian Racing Board has approved the development of formal screening limits for certain therapeutic substances. The screening limit is the concentration of a particular therapeutic substance (or its metabolite) in urine or plasma above which the racing laboratory will call the sample positive. Their adoption is facilitated by the introduction of Rule AR.178EA found in the Rules of Racing which can be found on the Australian Racing Board website – www.australianracingboard.com.au/rules

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RIRDC Pub. No. 13/038



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