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## **A Reference Source for the Recognition & Alleviation of Pain & Distress in Animals**

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United States Department of Agriculture**

**National Agricultural Library**

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**[Animal Welfare Information Center](#)**

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# **A Reference Source for the Recognition & Alleviation of Pain & Distress in Animals**

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## PREFACE

The Animal Welfare Information Center was established under the 1985 amendments to the Animal Welfare Act (Sect. 13(e)) and is required to provide specific information to the research community. One of these requirements deals with providing information which would minimize pain and distress to animals used in research.

It is hoped that his publication will be useful to those involved with animal research and that it will provide guidance and information which is useful in further reducing pain and distress in research animals. Science, and humanity, owe a great deal to these animals and they should be provided with conditions as free of pain and distress as possible, both for the welfare and well- being of the animal, and for better scientific results.

## INTRODUCTION

One of the requirements of the Animal Welfare Act is that procedures are to be taken to ensure that pain and distress in research animals are minimized. This includes adequate veterinary care and the appropriate use of anesthetics, analgesics and tranquilizing drugs or euthanasia (Sect. 13(a)(3)(A)). In order to minimize pain or distress to an animal one must first be able to recognize when an animal is in, or likely to be in, pain or distress. Steps can then be taken to alleviate that pain or distress so far as allowed by the approved research protocol.

This publication provides a list of published reference sources on the recognition and alleviation of pain and distress in animals. It has been developed to provide a source of information and guidance to those using animals in research so that they may better recognize when an animal is suffering pain or distress, or may be likely to suffer pain or distress, and how that pain or distress may be minimized. This publication is not meant to be a complete resource on this subject but to provide a starting point for those concerned about the welfare and humane care of animals used in research. For additional, and more complete, information and resources we suggest you consult the following web site on the compilation of scientific literature on the assessment of animal welfare:

**Literature on the Assessment of Animal Welfare.**

**<http://www.vetinfo.demon.nl/aw/flist.html>**

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USDA, NAL, AWIC

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## GENERAL

Adams, D.B., (1988), **An approach to pain in research animals.** *Alternatives to Laboratory Animals (ATLA)*. Nottingham: Fund for the Replacement of Animals in Medical Experiments. Dec 1988, v. 16 (2), p. 145-154. ISSN: 0261-1929

NAL Call no: Z7994.L3A5

Descriptors: laboratory animals, animal experiments, pain, anesthesia, ethics, diagnosis, treatment, animal welfare.

Association of Veterinary Teachers & Research Workers, (1989), *Guidelines for the recognition & assessment of pain in animals*. Potters Bar, Herts: Universities Federation for Animal Welfare, c1989, 24p. ISBN: 0900767561

NAL Call no: HV4708.G85

Descriptors: animal experimentation, animal welfare.

Australian College of Veterinary Scientists. Chapter of *Anaesthetics & Intensive Care*, (1994), **Animal pain and its control, April 1994.** Sydney South, NSW, Australia: Post Graduate Committee in Veterinary Science, University of Sydney [1994], iv. 449p, ill. ISBN: 1875582363

NAL Call no: SF604.R37 no.226

Descriptors: pain in animals.

Australian College of Veterinary Scientists, (1996), **Guidelines for the management of pain in veterinary practice.** *Australian Veterinary Practitioner*, 1996, 26: 4, p. 206-209. ISSN: 0005-0423.

NAL Call no: 41.8 AU72

Descriptors: pain, pain management, analgesia, guidelines.

Balfour, J.A.; Buckley, M.M., (1991), **Etodolac. A reappraisal of its pharmacology & therapeutic use in rheumatic diseases & pain states.** *Drugs*, 1991 Aug., v. 42 (2), p. 274-299. ISSN: 0012-6667.

Descriptors: Etodolac, pain, rheumatic diseases, therapeutic use.

Barnett, J.L., (1997), **Measuring pain in animals.** *Australian Veterinary Journal*, Brunswick, Victoria: Australian Veterinary Association, 1927-1997, v. 75 (12), p. 878-879. ISSN: 0005-0423.

NAL Call no: 41.8 Au72

Descriptors: animal welfare, pain, assessment, measurement.

Bateson, P., (1992), **Do animals feel pain?** *New-Science*, London, England: New Science Publications, Apr. 25, 1992, v. 134 (1818), p. 30, 32-33. ISSN: 0028-6664.

NAL Call no: 472 N42

Descriptors: animal experiments, animal welfare.

Bateson, P., (1991), **Assessment of pain in animals.** *Animal Behavior*, London: Academic Press, Nov 1991, v. 42 (pt5), p. 827-839. ISSN: 0003-3472.

NAL Call no: 410 B77

Descriptors: animal welfare, pain assessment.

Baumans, V. ; Benson, G.J. ; Flecknell, P. ; Morton, D. ; Short, C., (1994), **Detecting & alleviating pain in non-**

**human animals.** *Humane Innovative Alternatives*, Washington Grove, MD: Psychologists for the Ethical Treatment of Animals, c1991, 1994, v. 8, p. 580-586. ISSN: 1062-4805.

NAL Call no: QL55.H8

Descriptors: animals, pain, animal welfare, detection, alleviation.

Baumberger, A., (1983), **How to combat pain in animals: a report on the practical application of analgesics in experimental animals.** *Schweizer Arch Tierheilkd*, Zurich: Gesellschaft Schweizerischer Tierarzte, Jan 1983, v. 125 (1), p. 17-29. ISSN: 0036-7281.

Language: German, Summary in English, French, Italian.

NAL Call no: 41.8 SCH9

Descriptors: pain, analgesics, animals.

Bechara, A.; Harrington, F.; Nader, K.; van-der Kooy, D., (1992), **Neurobiology of motivation: Double dissociation of the motivational mechanisms mediating opiate reward in drug-naive versus drug-dependent animals.** *Behavioral Neuroscience*, 1992 Oct., v. 106 (5), p. 798-807. ISSN: 0735-7044.

NAL Call no: QP351.B45

Descriptors: neurobiology, opiate, motivational mechanisms.

Bemier, J.F., (1994), **Euthanasia.** *Canadian Association for Laboratory Animal Science Newsletter*. Ottawa: Canadian Association for Laboratory Animal Science, June 1994, v. 28 (3), p. 69-71, 73-74. ISSN: 0045-4354.

NAL Call no: SF405.5.C36

Descriptors: animals, euthanasia, methodology, pain, animal welfare.

Benson, G.J.; Thurmon, J.C., (1987), **Species differences as a consideration in alleviation of animal pain & distress.** *Journal of the American Veterinary Medical Association*, Schaumburg, IL: The Association, Nov 15, 1987, v. 191 (10), p. 1227-1230. ISSN: 0003-1488.

NAL Call no: 41.8 AM3

Descriptors: animals, pain, stress, analgesics.

Bonica, J.J., (1992), **Pain research & therapy: History, current status & future goals.** *Animal pain*, edited by Charles E. Short, Alan van Poznak, N.Y.: Churchill Livingstone, 1992, p. 1-29. ISBN: 0443087725.

NAL Call no: SF910 P34A55 1992

Descriptors: animals, pain, research, drug therapy, analgesics, livestock, laboratory animals, surgical operations, anesthesia.

Breazile, J.E., (1987), **Physiologic basis & consequences of distress in animals.** *Journal of the American Veterinary Medical Association.*, Schaumburg, IL: The Association, Nov 15, 1987, v. 191 (10), p. 1212-1215, ill. ISSN: 0003-1488.

NAL Call no: 41.8 AM3

Descriptors: animals, stress, feeding behavior, hormones, nervous system, reproduction.

Britton, J.T.; Rice, L.J., (1992), **Local anesthetic toxicity.** *Animal pain*, edited by Charles E. Short, Alan van Poznak. N.Y.: Churchill Livingstone, 1992, p. 306-310, 315. ISBN: 0443087725

NAL Call no: SF910.P34A55 1992

Descriptors: small animal practice, laboratory animals, local anesthetics, toxicity.

Brown, M.J., (1990), **Principles of anesthesia & analgesia. Essentials for animal research: A primer for research personnel.** by B.T. Bennett, M.J. Brown and J.C. Schofield, Beltsville, Md, USDA, National Agricultural Library (1990), p. 39-58.

NAL Call no: aQL55.B36

Descriptors: domestic animals, laboratory animals, anesthesia, anesthetics, analgesics, pain.

Buchholtz, C.; Goetschel, A.F.; Hassenstein, E.G.; Sambraus, H.H.; Tschanz, B.; Wechsler, B.; Wolf, M.; Van-Loeper, E., (1993), **Suffering & abnormal behavior in animals.** *Tierhaltung*, 1993, 23: 119 p.; published by Birkhauser Verlag, Switzerland. ISBN: 3763426727.

Language: German.

NAL Call no: SF105.T5 Bd.23

Descriptors: intensive husbandry, abnormal behavior, animal welfare.

Carbone, Lawrence G., (1997), **Death by decapitation: A case study of the scientific definition of animal welfare.** College of Veterinary Medicine, Cornell University, Ithaca, NY. *Society and Animals*, Oct. 1997, v. 5 (3), p. 239-256. ISSN: 1063-1119.

NAL Call no: QL85.S63

Descriptors: animal-human relations, scientific research, abuse.

Carstens, E.E., (1987), **Endogenous pain suppression mechanisms.** *Journal of the American Veterinary Medical Association*, Schaumburg, IL. The Association, Nov. 15, 1987, v. 191 (10), p.1203-1206, ill. ISSN: 0003-1488.

NAL Call no: 41.8 AM3

Descriptors: animals, pain, suppression, neurophysiology.

Carli, G., (1992), **Immobility responses & their behavioral & physiologic aspects, including pain: A review.** *Animal pain*, edited by Charles E. Short, Alan van Poznak, N.Y.: Churchill Livingstone, 1992, p. 543-554. ISBN: 0443087725.

NAL Call no: SF910.P34A55 1992

Descriptors: animals, pain, immobilization, physiology, literature reviews, tonic immobility, hypnosis.

Cats, B.P., (1988), **Pain in neonates.** *New developments in biosciences: Their implications for laboratory animal science: Proceedings of the Third Symposium*, Amsterdam, The Netherlands, 1-5 June 1987, edited by Anton C. Beyneen and Henk A. Solleveld, Dordrecht: M. Nijhoff, 1988, p. 47-51. ISBN: 0898383544.

NAL Call no: QL55.F43 1987

Descriptors: laboratory animals, neonates, pain, animal behavior, physiology.

Clark, J.D.; Rager, D.R.; Calpin, J.P., (1997), **Animal well-being II. Stress & distress.** *Laboratory Animal Science*, Cordova, TN: American Association for Laboratory Animal Science, Dec. 1997, v. 47 (6), p. 571-579. ISSN: 0023-6764.

NAL Call no: 410.9 P94

Descriptors: animal welfare, stress, perception, motivation, adaptation.

Curtis, S.E.; Stricklin, W.R., (1991), **The importance of animal cognition in agricultural animal production systems: An overview.** *Journal of Animal Science*, 1991 Dec., v. 69 (12), p. 5001-5007. ISSN: 0021-8812.

NAL Call no: 49 J82

Descriptors: animal cognition, animal production systems.

Delft, A.M.L.-van, (1988), **Effects of exogenous pain relieving substances on experimental results.** *New developments in biosciences: Their implications for laboratory animal science: Proceedings of the Third Symposium*, Amsterdam, The Netherlands, 1-5 June, 1987, edited by Anton C. Beyneen and Henk A. Solleveld, Dordrecht M. Nijhoff, 1988, p. 59-61. ISBN: 0898383544.

NAL Call no: QL55.F43 1987

Descriptors: laboratory animals, animal experiments, pain, treatment, analgesics.

Delo, J.A.; Coombs, D.W.; Colburn, R.W., (1992), **The differentiation of nociceptive processing in mechanically & chemically induced visceral pain models.** *Animal pain*, edited by Charles E. Short, Alan van Poznak, N.Y.:Churchill Livingstone, 1992, p. 497- 505, 507-508. ISBN: 0443087725.

NAL Call no: SF910.P34A55 1992

Descriptors: laboratory animals, pain, models, animal experiments, duodenal obstruction, analgesics, dosage, immunochemistry.

Doris, Pete A., (1989), **Humane principles & procedures in animal research.** *Animal research training series*, Lubbock, TX: Texas Tech University Health Science Center, c1989, 1 video cassette (30 min).

NAL Call no: videocassette no. 804 and 805

Descriptors: animal welfare, law and legislation (US), laboratory animals, animal experimentation.

Dubner, R., (1987), **Research on pain mechanisms in animals.** *Journal of the American Veterinary Medical Association*, Schaumburg, IL: The Association, Nov. 15, 1987, v. 191 (10), p. 1273-1276. ISSN: 0003-1488.  
NAL Call no: 41.8 AM3  
Descriptors: animals, pain, measurement, research, guidelines.

Dyson, D.H.; Mathews, K., (1992), **Recommendations for the intensive care management in small animals following anaesthesia.** Department of Clinical Studies, Ontario Veterinary College, Guelph, Ont. *Veterinary & Comparative Orthopaedics & Traumatology*, 1992, 5:2, p.66-70, 15 ref. ISSN: 0932-0814.  
NAL Call no: SF910.5.V4  
Descriptors: anaesthesia, postoperative complications, pain, therapy, postoperative care.

Erickson, H.H.; Kitchell, R.L., (1984), **Pain perception & alleviation in animals.** Federation of American Societies for Experimental Biology (FASEB). *Federation Proceedings*, v. 43 (5), 1984, p. 1307-1312. ISSN: 0014-9446.  
NAL Call no: 442.9 F31P  
Descriptors: pain, sedation, alleviation of pain, sensory receptor.

Faggella, A.M., (1997), **Management of pain in the critically ill patient.** *Seminars in Veterinary Medicine and Surgery-Small Animal*, Philadelphia, PA: W.B. Saunders Co., May 1997, v. 12 (2), p. 115-121. ISSN: 0882-0511.  
NAL Call no: SF911.545  
Descriptors: pain, control, analgesics, drug therapy, opioids, non-steroidal anti-inflammatory agents, application methods, animals.

Fikes, L.L.; Tranquilli, W.J.; Raffe, M.R., (1989), **Symposium on pain management. I Understanding pain & analgesic therapy in pets. II Classifying commonly used analgesic agents. III Selecting the right analgesic: Indications & dosage requirements.** College of Veterinary Medicine, University, Urbana, IL., *Veterinary Medicine*, 1989, 84: 7, p. 677-697, 44 ref. ISSN: 8750-7943.  
NAL Call no: 41.8 M69  
Descriptors: animal welfare, dog diseases, cat diseases, anti-inflammatory agents, opioids, anesthesia, burns, pain, young animals, analgesics.

Fraser, A.F.; Quine, J.P., (1989), **Veterinary examination of suffering as a behavior-linked condition.** *Applied Animal Behavior Science*, Amsterdam: Elsevier Science Publishers, B.V. July 1989, v. 23 (4), p. 353-364. ISSN: 0168-1591.  
NAL Call no: QL750.A6  
Descriptors: domestic animals, pain, animal welfare, veterinary medicine, animal behavior.

Flecknell, P.A., (1988), **The control of pain in animals.** *Veterinary Annual*, London: *Scientifica*, 1989, v. 28, p. 43-48. ISSN: 0083-5870.  
NAL Call no: 41.8 V6456  
Descriptors: animals, pain, anesthetics, analgesics, treatment.

Flecknell, P.A., (1985), **Recognition & alleviation of pain in animals.** *Advances in Animal Welfare Science*, Boston: Martinus Nijhoff Publishers, 1985, c1986, p. 61-77.  
NAL Call no: HV4701.A34  
Descriptors: laboratory animals, pain, animal welfare, analgesics, anti-inflammatory agents.

Flecknell, P.A.; Molony, V., (1997), **Pain & injury.** *Animal welfare*, Wallingford, Oxon, UK; N.Y.: CAB International, c1997, p.63-73. ISBN: 0851991807.  
NAL Call no: HV4711.A587 1997  
Descriptors: animals, pain, trauma, animal welfare.

Flecknell, P.A., (1994), **Refinement of animal use - assessment & alleviation of pain & distress.** *Laboratory Animals* (UK), 1994, v. 28 (3), p. 222-231. ISSN: 0023-6772.  
NAL Call no: QL55.A1L3

Descriptors: laboratory animals, animal welfare, experimentation, pain, stress, mammals, neurophysiology.

Fleetwood-Walker, S.M.; Hope, P.J.; Mitchell, R.; Molony, V., (1991), **Control of pain by chemical gating in the dorsal horn: Role of opioids, tachykins, & other peptides.** *Animal pain*, edited by Charles E. Short, Alan van Poznak, N.Y.: Churchill Livingstone, 1991, p. 489-497, 506-507. ISBN: 0443087725.

NAL Call no: SF910.P34A55 1992

Descriptors: laboratory animals, pain, opioids, peptides, analgesics, spinal cord receptors, drug effects.

Fujimoto, J.L., (1992), **Dosage tables for opiate agonist & agonist-antagonists in laboratory animals.** *Animal pain*, edited by Charles E. Short, Alan van Poznak, N.Y.: Churchill Livingstone, 1992, p. 539-542. ISBN: 0443087725.

NAL Call no: SF910.P34A55 1992

Descriptors: agonists, antagonists, dosage, morphine, laboratory animals.

Gibson, T.E., (1985), **The proceedings of the Animal Welfare Foundation's Second Symposium: Entitled the detection & relief of pain in animals**, held 16 Apr. 1985. *British Veterinary Association, Animal Welfare foundation*, 1985, 136 p. ISBN: 0901028290.

NAL Call no: HV4704.A54 1985

Descriptors: animal welfare congress, pain congress.

Grauvogl, A., (1982), **The concept of pain in animals, behavior, welfare.** *Tierzuchter*, Hildesheim, W.Ger., *Arbeitsgemeinschaft Deutscher Tierzuchter*, July 25, 1982, v. 34 (7), p. 297-301. ISSN: 0040-7364.

Language: German with a summary in English.

NAL Call no: 49 T445

Descriptors: pain, animals, behavior, welfare.

Hansen, B., (1997), **Pain.** *Seminars in Veterinary Medicine & Surgery Small Animal*, 1997, v. 12 (2), p.55-142, many ref.

NAL Call no: SF911.S45

Descriptors: pain, animals, surgery.

Hansen, Hans C., (1999), **Treatment of chronic pain with anti-epileptic drugs: A new era.** *Southern Medical Journal*, July 1999, v. 92 (7), p. 642-649. ISSN: 0038-4348.

Descriptors: chronic pain, management, analgesic drugs, anti-epileptics.

Hapke, H.J., (1977), **The influence of drugs on the manifestation & sensation of pain [animals].** *Kleinter Prex*, Mar. 1977, v. 22 (2), p. 55-58.

Language: German with a summary in English.

NAL Call no: 41.8 K67

Descriptors: pain, animals, drugs, behavior.

Hardie, E.M.; Kyles, A.E., (1995), **Pharmacological management of pain & infection in the surgical oncology patient.** *Veterinary Clinics of North America, Small Animal Practice*, 1995, v. 25 (1), p. 77-96. 60 ref. ISSN: 0195-5616.

NAL Call no: SF601.V523

Descriptors: dog diseases, surgery, anti-inflammatory agents, neoplasms, pain, drug therapy.

Harrison, P., (1991), **Do animals feel pain?** *Philosophy* (Cambridge) v. 65 no. 255, 1991, p. 25-40. ISSN: 0031-8191.

Descriptors: philosophy and ethics, pain perception in animals, philosophical evaluation.

Headly, P.M., (1993), **Norbook Lecture: Mechanisms of pain & its control.** *Veterinary Record.*, 1993, Aug. 14, v. 133 (7), p. 153-155. ISSN: 0042-4900.

NAL Call no: 41.8 V641

Descriptors: pain mechanisms, pain control.

Heavner, J.E., (1992), **Pain recognition during experimentation & tailoring anesthetic & analgesic administration**

**to the experiment.** *Animal pain*, edited by Charles E. Short, Alan van Paznak, N.Y.: Churchill Livingstone, 1993, p. 509-513. ISBN: 0443087725.

NAL Call no: SF910.P34A35 1992

Descriptors: animal experiment, pain, anesthetics, analgesics, laboratory animals.

Hellyer, P.W.; Frederick, C.; Lacy, M.; Salman, M.D.; Wagner, A.E., (1999), **Attitudes of veterinary medical students, house officers, clinical faculty, & staff toward pain management in animals.** *Journal of the American Veterinary Medical Association.*, Schaumburg, IL: American Veterinary Medical Association, Jan. 15, 1999, v. 214 (2), p. 238-244. ISSN: 0003-1488.

NAL Call no: 41.8 Am3

Descriptors: pain, treatment, attitudes, veterinary medicine, medical students, teachers, personnel, analgesics.

Hellyer, P., (1998), **American College of Veterinary Anesthesiologists' position paper on treatment of pain in animals.** *Journal of the American Veterinary Medical Association*, Schaumburg, IL: American Veterinary Medical Association, Sept. 1, 1998, v. 213 (5), p. 628-630. ISSN: 0003-1488.

NAL Call no: 41.8 Am3

Descriptors: animal welfare, pain, symptoms, treatment, anesthesia.

Hooff, Jaram, van, (1988), **On the ethology of pain, its experience & expression.** *New developments in biosciences: Their implications for laboratory animal science. Proceedings of the Third Symposium*, Amsterdam, The Netherlands, 1-5 June 1987, edited by Anton C. Beyneen and Henk A. Solleveld, Dordrecht: M. Nijhoff, 1988, p. 41-46. ISBN: 0898383544.

NAL Call no: QL55.F43 1987

Descriptors: laboratory animals, animal experiments, pain, ethics, animal behavior.

Hooff, Jaram, van; Baumans, V.; Brain, P.F.; Zutphen, L.F.M. van (ed); Beyneen, A.C., (1993), **Recognition of pain & distress.** *Principles of laboratory sciences: A contribution to the humane use and care of animals and the quality of experimental results.* 1993, p. 255-265, 15 ref. Elsevier Science Publishers; Amsterdam, Netherlands. ISBN: 0444812709.

NAL Call no: QL55.P762 1993

Descriptors: laboratory animals, pain, animal welfare, animal experiments.

Hoskins, J.D., (1991), **Pain management.** *Veterinary Technician*, 1991, 12:10, p. 715-717, 12 ref. ISSN: 8750-8990.

NAL Call no: SF406.A5

Descriptors: pain, analgesics.

Hsu, W.H., (1992), **Antagonism of pharmacologic effects of xylazine.** *Animal pain*, edited by Charles E. Short, Alan van Poznak, N.Y.: Churchill Livingstone, 1992, p. 225-236, 243.

ISBN: 0443087725.

NAL Call no: SF910.P34A35 1992

Descriptors: dogs, domestic animals, ruminants, agonists, adverse effects, adrenergic receptors, yohimbine, phenoybenzamine, propanolol, central nervous system, pain, drug therapy, xylazine.

Iggo, Ainsley, (1985), **Pain in animals:** The Hume Memorial Lecture, 15th Nov.1984 at King's College, Universities of London & 22nd Nov. 1984 at the Royal Society of Edinburgh. Potters Bar, Hertfordshire: *Universities Federation for Animal Welfare*, c1985, 16 p; ill.

ISBN: 0900767375.

NAL Call no: QP451.4.I28 1985

Descriptors: animal welfare, pain, animals.

Institute of Laboratory Animal Resources (ILAR) (US). Committee on Pain & Distress in Laboratory Animals, (1992), *Recognition & alleviation of pain & distress in laboratory animals.* Washington, DC, National Academy Press, 1992, xiii, 137 p., ill. ISBN: 0309042755.

NAL Call no: SF996.5.R43 1992

Descriptors: laboratory animal diseases, pain in animals, laboratory animals, effect of stress on, animal welfare.

Jennings, R.C., (1998), **A philosophical consideration of awareness.** *Applied Animal Behavior Science*, 1998, v. 57, n. 3-4, p. 201-211. ISSN: 0168-1591.

NAL Call no: QL750.A6

Descriptors: self recognition, cognitive ability, reviews, philosophy.

Jennings, V.M., (1995), **Review of selected adjuvants used in antibody production.** *Institute for Laboratory Animal Resources Journal*, Washington, DC, Institute for Laboratory Animal Resources, National Research Council, 1995, v. 37 (3), p. 119- 124. ISSN: 1084-2020.

NAL Call no: QL55.A1I43

Descriptors: adjuvants, immunostimulants, antibodies, biological production, toxicity, adverse effects, pain, granuloma, arthritis, animal welfare, laboratory animals.

Jones, R.B., (1997), **Fear & distress.** *Animal Welfare*, Wallingford, Oxon, UK; N.Y.: CAB International, c1997, p. 75-87. ISBN: 0851991807.

NAL Call no: HV4711.A587 1997

Descriptors: animal suffering.

Kamerling, S.G., (1993), **Narcotics & local anesthetics.** *Veterinary Clinics of North America Equine Practice*, v.. 9 (3), 1993, p. 605-620, 46 ref. ISSN: 0749-0739.

NAL Call no: SF951.V47

Descriptors: anesthetics, local therapeutic use, horse diseases, drug therapy, pain, narcotics.

Keefe, F.J.; Fillingham, R.B.; Williams, D.A., (1991), **Behavioral assessment of pain: Nonverbal measures in animals & humans.** *Institute of Laboratory Animal Resources News*, Washington, DC: Institute of Laboratory Animal Resources, National Research Council, Winter/Spring 1991, v. 33 (1/2), p.3-13. ISSN: 0018- 9960.

NAL Call no: QL55.A1I43

Descriptors: laboratory animals, man, pain evaluation, behavior.

Kelly, D.D., (1986), **Stress-induced analgesia.** *Annals of the New York Academy of Sciences*, New York, NY: New York Academy of Sciences, 1986, v. 467, 447 p. ISSN: 0077-8923.

NAL Call no: 500 N484 v.467

Descriptors: analgesia, stress physiology, central nervous system, pain, opium alkaloids, peptides, animals, nerves, tolerance.

Kitchell, R.L., (1987), **Problems in defining pain & peripheral mechanisms of pain.** *Journal of the American Veterinary Medical Association*, Schaumburg, IL: The Association, Nov. 15, 1987, v. 191 (10), p. 1195-1199. ISSN: 0003-1488.

NAL Call no: 41.8 AM3

Descriptors: animals, pain, neurophysiology, perception, receptors.

Kitchell, R.L.; Johnson, R.D., (1985), **Assessment of pain in animals.** *Animal stress*, editor Gary P. Moberg, Bethesda, MD: American Physiological Society, c1985, p. 113-140, ill.

ISBN: 0683061011.

NAL Call no: QP82.2.58A55

Descriptors: domestic animals, pain, senses, perception, animal behavior, cerebral cortex, receptors, thalamus.

Kitchell, R.L.; Ericksen, H.H.,(Eds), (1983), **Animal pain: Perception & alleviation.** *American Physiological Society*, 1983: i-x, p. 1-221, ill. Based on a symposium held at 66th Annual Meeting, Federation of American Societies for Experimental Biology (FASEB), New Orleans, 1982.

NAL Call no: QP451.4.A54

Descriptors: pain, perception, alleviation.

Klide, A.M., (1993), **Use of acupuncture for the control of chronic pain & for surgical anesthesia.** *Animal pain*, edited by Charles E. Short, Alan van Poznak, N.Y.: Churchill Livingstone, 1992, p. 249-257. ISBN: 0443087725.

NAL Call no: SF910.P34A55 1992

Descriptors: animals, horses, laminitis, surgical operations, analgesics, treatment, acupuncture.

Kyles, A.E., (1998), **Transdermal fentanyl**. *Compendium on Continuing Education for the Practicing Veterinarian*, 1998, v. 20 (6), p. 721-722, 724-726, 23 ref. ISBN: 0444824243.

ISSN: 0193-1903.

NAL Call no: SF601.C66

Descriptors: pain, analgesia.

Lane, D.R., (1987), **The assessment of welfare in diseased companion animals**. *The proceedings of the British Veterinary Association, Animal Welfare Foundation's fifth symposium: Entitled "Animal disease--a welfare problem?"* held on 18 Nov. 1987, edited by T.E. Gibson; asst. ed., D.A. Paterson, London: The Foundation, 1987, p. 31-41. ISBN: 0901028347.

NAL Call no: HV4704.A54 1987

Descriptors: animal welfare, pet animals, animal diseases, pain, euthanasia, veterinary services.

Loeffler, K., (1993), **Pain & fear in animals**. *Deutsche Tierärztliche Wochenschrift*, 1993, Feb., v. 100 (2), p. 69-70, 11 ref. ISSN: 0341-6593.

Language: German with a summary in English.

NAL Call no: 41.8 D482

Descriptors: nervous system, fright, animal behavior, pain, animal welfare.

Loew, F.M., (1981), **Alleviation of pain: The researchers obligation**. *Laboratory Animals*, N.Y., United Business Publications, Sept. 1981, v. 10 (5), p. 36, 38. ISSN: 0093-7355.

NAL Call no: QL55.A1L33

Descriptors: pain, drugs, alleviation.

Lopez, R.A., (1991), **Animal vs. human pain**. *Humane Innovations and Alternatives*, Washington Grove, MD: Psychologists for the Ethical Treatment of Animals, 1991, v. 5, p. 287-288.

ISSN: 1062-4805.

NAL Call no: QL55.H8

Descriptors: animals, man, pain, perception.

Ludders, J.W., (1992), **Pharmacokinetics & the use of animals in research**. *Animal pain*, edited by Charles E. Short, Alan van Poznak N.Y.: Churchill Livingstone, 1992, p. 318-322, 357-358. ISBN: 0443087725.

NAL Call no: SF910.P34A55 1992

Descriptors: laboratory animals, dogs, cats, sheep, research, pharmacokinetics, central nervous system, diazepam, thiopental, pentobarbital, anesthetics, analgesics, methohexital, thiamylal.

MacDonald, E.; Virtanen, Raimo, (1992), **Review of pharmacology of medetomidine & detomidine: Two chemically similar alpha-2-adrenoreceptor agonists used as veterinary sedatives**. *Animal pain*, edited by Charles E. Short, Alan van Poznak, N.Y.: Churchill Livingstone, 1992, p. 181-191, 198-199. ISBN: 0443087725.

NAL Call no: SF910.P34A55 1992

Descriptors: laboratory animals, rat, agonists, pharmacology, pharmacokinetics, veterinary medicine, analgesics, central nervous system, cardiovascular system, alpha adrenergic receptors.

Mama, K., (1999), **New options for managing chronic pain in small animals**. *Veterinary Medicine*, Lenexa, KS: Veterinary Medicine Publishing Group, Apr. 1999, v. 94 (4), p. 352-357. ISSN: 8750-7943.

NAL Call no: 41.8 M69

Descriptors: dogs, cats, pain, treatment, non-steroidal anti-inflammatory agents, drug therapy, fentanyl, transdermal application.

Marks, D.; Haussler, K.K., (1999), **Medical management of back pain**. *Back problems, Veterinary Clinics of North America, Equine Practice*, 1999, v. 15 (1), p179-194, 27ref. ISSN: 0749-0739.

NAL Call no: SF957.V47

Descriptors: back pain, analgesics, management.

Mather, L.E., (1995), **1994 John J. Bonica Lecture. The clinical effects of morphine pharmacology.** *Regional Anesthesia*, 1995, Jul.-Aug., v. 20 (4), p. 263-282. ISSN: 0146-521X.

Descriptors: morphine, analgesia, pain, effects.

Mayer, David J.; Mao, Jianren; Holt, Jason; Price, Donald D., (1999), **Cellular mechanisms of neuropathic pain, morphine tolerance & their interactions.** *Proceedings of the National Academy of Science of the United States of America*, July 6, 1999, v. 96 (14), p. 7731-7736. ISSN: 0027-2424.

Descriptors: hyperalgesia, nervous system diseases, neuropathic pain, cellular mechanism, pain.

McQuay, Henry, (1999), **Opioids in pain management.** *Lancet*, North American Edition, June 26, 1999, v. 353 (9171), p. 2229-2232. ISSN: 0099-5355.

NAL Call no: 448.8 L22

Descriptors: pain management, analgesic drug, tolerance.

Mickwitz, G.V., (1984), **Pain & pain reactions in animals.** [s.l: s.n., 1984?] 10 leaves.

Language: German

Translated from: *Prakt Tier*, v. 64, n.1: p. 26, 28, 31, 34, 35, 36, Jan 1983. Monograph.

NAL Call no: TRANSL 31760

Descriptors: pain, reactions, behavior.

Moberg, G.P., (1987), **Problems in defining stress & distress in animals.** *Journal of the American Veterinary Medical Association*., Schaumburg, IL: The Association, Nov. 15, 1987, v. 191 (10), p. 1207-1211. ISSN: 0003-1488.

NAL Call no: 41.8 AM3

Descriptors: animals, stress, measurements.

Morton, D.B.; Griffiths, P.H.M., (1985), **Guidelines on the recognition of pain, distress & discomfort in experimental animals & an hypothesis for assessment.** *Veterinary Record*, London: British Veterinary Association, Apr. 20, 1985, v. 116 (16), p. 431-436.

ISSN: 0042-4900.

NAL Call no: 41.8 V641

Descriptors: laboratory animals, animal welfare, pain.

Morton, D.B., (1990), **Adverse effects in animals & their relevance to refining scientific procedures.** *Alternatives to Laboratory Animals (ATLA)*., Nottingham: Fund for the Replacement of Animals in Medical Experiments, Nov. 1990, v. 18, p. 29-39. ISSN: 0261-1929.

NAL Call no: Z7994.L3A5

Descriptors: laboratory animals, animal welfare.

Morton, D., (1997), **The recognition of adverse effects on animals during experiments & its use in the implementation of refinement.** *Ethical approaches to animal-based science. Proceedings of the Joint ANZCCART-NAEAC Conference*, Auckland, New Zealand, 19-20 Sept., 1997.1998, p. 61-67, 25 ref. ISBN: 0908654839.

Descriptors: distress effects, refinement, experiments.

Morton, D.B.; Zutphen, L.F.M.-van (ed); Balls, M., (1997), **A scheme for the recognition & assessment of adverse effects in animals.** *Animal alternatives, welfare & ethics. Proceedings of the 2nd world Congress*, Utrecht, The Netherlands, 20-24 Oct., 1996.1997, p. 235-240, 10 ref. Elsevier Science Publishers, Amsterdam, Netherlands.

ISBN: 0444824243

NAL Call no: QL1.D48 v.27

Descriptors: animals, adverse effects, recognition.

Mroczek, N.S., (1991), **Recognizing animal suffering & pain.** *Humane Innovations and Alternatives*, Washington Grove, MD: Psychologists for the Ethical Treatment of Animals, 1991, v. 5, p. 289-293. ISSN: 1062-4805.

NAL Call no: QL55.H8

Descriptors: laboratory animals, pain, animal welfare, stress, stress factors, animal behavior.

Murphy, D.H., (1982), **The problem of pain: What do animals really feel?** *International Journal for the Study of Animal Problems*, v. 3 (3), 1982, p. 275-282. ISSN: 0195-7554.

NAL Call no: HV4701.I49

Descriptors: philosophy and ethics, sensory receptors, pain sensitivity, ethical questions.

Nurmikko, T.J.; Nash, T.P.; Wiles, J.P., (1998), **Recent advances: Control of chronic pain.** Walton Centre for Neurology & Neurosurgery NHS Trust, Liverpool, UK, *British Medical Journal*, Nov. 21, 1998, v. 317 (7170), p. 1438-1441. ISSN: 0959-8138.

NAL Call no: R31.B55

Descriptors: chronic pain, control, pain management programs.

O'Brian, M.G., (1998), **Cancer pain management: A review of recent considerations & advancements.** *Veterinary Cancer Society Newsletter*, 1998, v. 22 (2), p. 1-6, 21 ref.

NAL Call no: SF910.T8N4

Descriptors: cancer, pain management.

Olfert, E.D., (1993), **Defining an acceptable endpoint in invasive experiments.** *Canadian Association of Laboratory Animal Science*, Oct. 1993, v. 27 (5), p. 131-135. ISSN: 0045-4354.

NAL Call no: SF405.5.C36

Descriptors: laboratory animals, animal welfare, death, pain, experimental design, humane endpoints.

Oliver, J.E. Jr., (1974), **Neurologic examinations: Sensation, pain [animals].**

*Veterinary Medicine Small Animal Clinic*, May 1974, v. 69 (5), p. 607-610, ref.

NAL Call no: 41.8 M69

Descriptors: neurology, pain, sensation.

Orlans, F.B., (1996), **Invasiveness scales for animal pain & distress.** *Lab Animal*, N.Y., N.Y.: Nature Publishing Co., June 1996, v. 25 (6), p. 23-25. ISSN: 0093-7355.

NAL Call no: QL55.A1L23

Descriptors: laboratory animals, animal experiments, pain, animal welfare, measurement, invasive procedures.

Orlans, F.B., (1990), **Animal pain scales in public policy.** *Alternatives to Laboratory Animals (ATLA)*., Nottingham: Fund for the Replacement of animals in Medical Experiments, Nov. 1990, v. 18, p.41-50. ISSN: 0261-1929.

NAL Call no: Z7994.L3A5

Descriptors: laboratory animals, pain.

Osuna, D.J., (1994), **Medical management of degenerative joint disease.** Publication *Veterinary Continuing Education*, Massey University, 1994, no. 158, p. 107-110. Proceedings from an Annual Seminar for Equine Branch & Companion Animal Society, New Zealand Veterinary Association, June, 1994.

NAL Call no: SF604.P82 no.158

Descriptors: degenerative joint disease, pain, management.

Otto, K.A.; Short, C.E., (1998), **Pharmaceutical control of pain in large animals.** *Applied Animal Behavior Society*, Amsterdam; N.Y.: Elsevier 1984-Aug. 1998, v. 59 (1-3), p. 157-169. ISSN: 0168-1591.

NAL Call no: QL750.A6

Descriptors: cattle, horses, sheep, goats, pigs, llamas, analgesics, pain, responses, anesthesia, agonists, dosage, animal behavior, animal welfare, species differences, conduction, literature reviews.

Pakes. S.P., (1990), **Contributions of the laboratory animal veterinarian to refining experiments in toxicology.** *Fundamental & Applied Toxicology*, 1991 Jul., v. 15 (1), p. 17-24. ISSN: 0272-0590.

NAL Call no: RA1190.F8

Descriptors: laboratory animal veterinarians, contributions, experiments.

Phillips, M.T., (1993), **Savages, drunks, & lab animals: The researcher's perception of pain.** *Society & Animals* Washington Grove, MD, Psychologists for the Ethical Treatment of Animals, 1993, v. 1 (1), p. 61-81. ISSN: 1063-1119.

NAL Call no: QL85.S63

Descriptors: laboratory animals, surgery, analgesics.

Pratt, Dallas, (1980), *Alternatives to pain in experiments on animals.* 2nd ed., New York: Argus Archives, c1980, viii, 283p., ill. ISBN: 0916858065.

NAL Call no: HV4930.P73 1980

Descriptors: vivisection, laboratory animals, animals, treatment of (U.S.), animal welfare, animal experimentation.

Prudden, B., (1992), **Myotherapy--my experiences with stopping cycles of pain (it only hurts when I bark, meow, neigh, moo, baa, oink, squawk...or say ouch!** *Humane Innovations and Alternatives*, Washington Grove, MD: Psychologists for the Ethical Treatment of Animals, 1992, v. 6, p. 351-353. ISSN: 1062-4805.

NAL Call no: Q55.H8

Descriptors: animals, pain, spasms, muscles, physical therapy.

Raffe, M.R., (1992), **Animal models for the evaluation of analgesic agents.** *Animal pain*, edited by Charles E. Short, Alan Van Poznak, N.Y.; Churchill Livingstone, 1992, p. 453-458, 478. ISBN: 0443087725.

NAL Call no: SF910.P34A55

Descriptors: animals, pain, models, analgesics, research.

Ree, J.M. van, (1988), **Endorphins & pain.** *New developments in biosciences: Their implications for laboratory animal science: Proceedings of the Third Symposium, Amsterdam, The Netherlands, 1-5 June 1987*, edited by Anton C. Beyneen and Henk A. Solleveld. Dordrecht: M. Nijhoff, 1998, p. 53-57. ISBN: 0898383544.

NAL Call no: QL55.F43 1987

Descriptors: laboratory animals, animal experiments, pain, endorphins.

Ree, J.M. van, (1985), **Pain & endorphins.** *Tijdschrift Diergeneeskunde*, Utrecht; Nederlandse Maatschappij voor Diergeneeskunde, Jan. 1, 1985, v. 110 (1), p.3-11, ill. ISSN: 0040-7453.

Language: Dutch with a summary in English.

NAL Call no: 41.8 T431

Descriptors: animals, pain, endorphins.

Rollin, Bernard E., (1989), **The unheeded cry: Animal consciousness, animal pain & science.** *Studies in Bioethics*, Oxford, Eng., N.Y.: Oxford University Press, 1989, xviii, 308 p., ill.

ISBN: 0192177656.

NAL Call no: QL55.R65

Descriptors: laboratory animals, moral & ethical aspects, animal welfare.

Rollin, B., (1989), *Animal pain, animal rights & human obligations.* Edited by Tom Regan, Peter Singer, 2nd ed., Englewood Cliffs, N.J.: Prentice Hall, c1989, p. 60- 65. ISBN: 0130368644.

NAL Call no: HV4711.A56

Descriptors: horses, animal behavior, animal welfare, animal research, laboratory animals, pain, castration, suxamethonium.

Rollin, B., (1987), **Animal pain, scientific ideology, & the reappropriation of common sense.** *Journal of the American Veterinary Medical Association.* Schaumburg, IL: The Association, Nov. 15, 1987, v. 191 (10), p. 1222-1226. ISSN: 0003-1488.

NAL Call no: 41.8.AM3

Descriptors: animals, pain, bioethics, animal welfare, animal experiments.

Roswell, H.C., (1992), **The future control of pain in animals used for teaching & research.** *Animal pain*, edited by Charles E. Short, Alan van Poznak, N.Y.: Churchill Livingstone, 1992, P. 525-537. ISBN: 0443087725.

NAL Call no: SF910.P34A55 1992

Descriptors: animal experiments, laboratory animals, pain, research, teaching, education.

Rozemond, H., (1985), **Pain: A matter of conscience.** *Tijdschrift Diergeneeskunde*, Utrecht, Nederlandse Maatschappij voor Diergeneeskunde, Jan. 1, 1985, v. 110 (1), p. 21-30, ill.

ISSN: 0040-7453.

Language: Dutch with a summary in English.

NAL Call no: 41.8 T431

Descriptors: veterinarians, domestic animals, animal welfare, pain.

Sackman, J.E., (1991), **Pain II, Control of pain in animals.** *Compendium on Continuing Education for the Practicing Veterinarian*, Trenton, N.J.: Veterinary Learning System Co., Feb. 1991, v. 13 (2), p. 181-187, 190-192. ISSN: 0193-1903.

NAL Call no: SF601.C66

Descriptors: dogs, cats, analgesics, pain, opium alkaloids, receptors, narcotic antagonists, anti-inflammatory agents, arachidonic acid, modes of action, treatment, dosage.

Sackman, J.E.; McCurnin, D.M., (1998), *Pain management.* Clinical textbook for veterinary technicians, 1998, Ed. 4, p. 507-523, 13 ref., W.B. Saunders, Philadelphia. ISBN: 0721621961.

Descriptors: pain, management.

Sackman, J.E., (1997), **Pain & its management.** *Veterinary clinics of North America, Small Animal Practice*, 1997, V. 27 (6), p. 1487-1504, 27 ref. ISSN: 0195-5616.

NAL Call no: SF601.V523

Descriptors: pain, management.

Sanford, J., (1992), **Initiatives & experience in the United Kingdom.** *Animal pain*, edited by Charles E. Short, Alan van Poznak, N.Y.: Churchill Livingstone, 1992, p. 515-524. ISBN: 0443087725.

NAL Call no: SF910.P34A55

Descriptors: animal experiments, laboratory animals, pain, detection, UK.

Sanford, J.; Ewbank, R.; Molony, V.; Tavernor, W.D.; Uvarov, O., (1986), **Guidelines for the recognition & assessment of pain in animals.** *Veterinary Record.*, London: British Veterinary Association., Mar. 22, 1986, v. 118 (12), p. 334-338. ISSN: 0042-4900.

NAL Call no: 41.8.V641

Descriptors: laboratory animals, mammals, pain, animal welfare, guidelines, veterinary practice.

Saulya, A.I., (1987), **Influence of emotional-pain stress on contractile function of myocardium during long-term hypokinesia** (Abstract only). Joint Publications Research Service, Arlington, VA., NASA, Washington, DC. Science & Technology, USSR: Life Sciences, p. 67-68. Trans. into English from *Byulleten Eksperimentalnoy Biologii I Meditsiny* (Moscow, USSR), v. 98 (12), Dec. 1984, p. 651-653. NTIS 1985 (#14-26) - 1990 (#1-21).

Descriptors: Contraction, emotional factors, hypokinesia, myocardium, psychological effects, neuroses, rats, orthostatic tolerance.

Short, Charles E.; van-Poznak, Alan, (1992), *Animal pain.* N.Y.: Churchill Livingstone, 1992, xxii, 587 p., ill. ISBN: 0443087725.

NAL Call no: SF910.P34A55 1992

Descriptors: pain in animals.

Short, C.E., (1998), **Fundamentals of pain perception in animals.** *Applied Animal Behavior Science*, Amsterdam; N.Y.: Elsevier, 1984-Aug. 1998, v. 59 (1/3), p. 125-133. ISSN: 0168-1591.

NAL Call no: QL750.A6

Descriptors: animals, pain, neurons, animal behavior, post operative care, veterinary practice, animal welfare, analgesics, anesthetics.

Short, Charles E.; Weide, Kenneth, D.; Kim, C., (1997), *Pain in animals: Mechanisms, medications, clinical*

*management*. Monograph series, Las Vegas, NV: Western Veterinary Conference, c1997, 100 p., ill.

NAL Call no: SF910.P34S45 1997

Descriptors: pain in animals congress.

Short, Charles, E.; van-Poznak, Allan, (1992), **Animal pain: ethical & scientific perspectives**: The proceedings of a conference held at the Barossa Valley, Adelaide. April, 1990. Glen Osmond, SA, Australia. *Australian Council for the Care of Animals in Research and Teaching* (ACCART), 1992, vii, 94 p., ill. ISBN: 0643053832.

NAL Call no: SF910.P34A56 1992

Descriptors: pain in animals, laboratory animals.

Spinelli, J.S.; Markowitz, H., (1987), **Clinical recognition & anticipation of situations likely to induce suffering in animals**. *Journal of the American Veterinary Medical Association*., Schaumburg, IL: The Association, Nov. 15, 1987, v. 191 (10), p. 1216-1218. ISSN: 0003-1488.

NAL Call no: 41.8 AM3

Descriptors: animals, pain, animal welfare.

Spinelli, J.S.; Markowitz, H., (1985), **Prevention of cage associated distress**. *Lab Animal*., N.Y.: Media Horizons, Nov./Dec. 1985, v. 14 (8), p. 19-22, 24, 28. ISSN: 0093-7355.

NAL Call no: QL55.A1L33

Descriptors: laboratory animals, cage rearing, stress, prevention.

Stanley, T.H., (1987), **New developments in opioid drug research for alleviation of animal pain**. *Journal of the American Veterinary Medical Association*., Schaumburg, IL: The Association, Nov. 15, 1987, v. 191 (10), p. 1269-1272. ISSN: 0003-1488.

NAL Call no: 41.8 AM3

Descriptors: animals, pain, analgesics, research, immobilization.

Tasker, R.A.R., (1992), **Studies on the role of andrenergic receptors in a model of tonic pain**. *Animal pain*, edited by Charles E. Short, Alan van Poznak, N.Y.: Churchill Livingstone, 1992, p. 63-79. ISBN: 0443087725.

NAL Call no: SF910.P34A55 1992

Descriptors: laboratory animals, rats, pain, alpha andrenergic receptors, drugs, testing drug effects, analgesics, yohimbine, dosage, methoxamine.

Toth, L.A., (1997), **The moribund state as an experimental endpoint**. *Contemporary Topics in Laboratory Animal Science*., Cordova, TN: The Association, 1992-May 1997, v. 36 (3), p. 44-48. ISSN: 1060-0558.

NAL Call no: SF405.5.A23

Descriptors: laboratory animals, animal experiments, animal welfare, death & dying, assessment, pain, euthanasia.

Vierck, C.J. Jr, (1976), **Extrapolations from the pain research literature to problems of adequate veterinary care [laboratory animals]**. *Journal of the American Veterinary Medical Association*, Mar. 15, 1976, v. 168 (6), p. 510-513, ref.

NAL Call no: 41.8 AM3

Descriptors: pain research, literature, adequate veterinary care.

Wallace, J.; Sanford, J.; Smith, M.W.; Spencer, K.V., (1990), **The assessment & control of the severity of scientific procedures on laboratory animals**. Institute of Cancer Research, Belmont, Surrey, UK, *Laboratory Animals*, 1990, v. 24 (2), p. 97-130, 25 ref. ISSN: 0023-6772.

NAL Call no: QL55.A1L3

Descriptors: laboratory animals, animal welfare, pain.

Wall, P.D., (1992), **Defining pain in animals**. *Animal pain*, edited by Charles E. Short, Alan van Poznak, N.Y.: Churchill Livingstone, 1992, p. 63-79. ISBN: 0443087725.

NAL Call no: SF910.P34A55 1992

Descriptors: animals, pain, measurement, central nervous system, reflexes, analgesics.

Wiepkema, P.R., (1985), **Significance of behavioral disturbances in farm animals.** *Tijdschrift Diergeneeskunde*, Utrecht, Nederlandse Maatschappij voor Diergeneeskunde, Jan. 1, 1985, v. 110 (1), p. 12-20, ill. ISSN: 0040-7453. Language: Dutch with a summary in English.

NAL Call no: 41.8 T431

Descriptors: sows, calves, intensive livestock farming, pain, endorphins, stress, abnormal behavior.

Willis, W.D.; Chung, J.M., (1987), **Central mechanisms of pain.** *Journal of the American Veterinary Medical Association.*, Schaumburg, IL: The Association, Nov. 15, 1987, v. 191 (10), p. 1200-1202. ISSN: 0003-1488.

NAL Call no: 41.8 AM3

Descriptors: animals, pain, receptors, neurophysiology, thalamus, cerebral cortex.

Willis, W.D. Jr, (1983), **Ascending pathways transmitting nociceptive information in animals.** Kitchell, R.L. & Erickson, H.H. (Eds). *Animal pain: Perception & alleviation.* American Physiological Society, Bethesda, MD, 1983, : ix, p. 1-221, chapter pagination: 41-62, ill.

NAL Call no: QP451.4.A54

Descriptors: spinal cord, sensory reception, nervous system & behavior, pain reception & responses.

Wolfensohn, Sara; Lloyd, Maggie, (1994), *Handbook of laboratory animal management & welfare.* Oxford, N.Y.: Oxford Press, 1994, xi, 304 p., ill. ISBN: 0198548338(hbk); 019854832x(pbk).

NAL Call no: SF406.W64 1994

Descriptors: laboratory animals handbook, mammals, animal welfare handbooks.

Yoxall, A.T., (1978), **Pain in small animals, its recognition & control.** *Journal of Small Animal Practice*, Aug. 1978, v. 19 (8), p. 423-438, ref.

NAL Call no: 41.8 J8292

Descriptors: pain, small animals, recognition, control.

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[Monkeys & Apes](#) / [Non Domestic Animals](#) / [Post Operative Pain](#) / [Rabbits](#) / [Rats](#) / [Rodents](#)

## GENERAL

Amyx, H.L., (1987), **Control of pain & distress in antibody production & infectious disease studies.** *Journal of the American Veterinary Medical Association*, Nov. 15, 1987, v. 191 (10), p. 1287-1289. ISSN: 0003-1488.

NAL Call no: 41.8 AM3

Descriptors: laboratory animals, pain, stress, adjuvants, monoclonal antibodies, infectious diseases, animal experiments.

Brock, N., (1995), **Treating moderate & severe pain in small animals.** *Canadian Veterinary Journal*, Ottawa: Canadian Veterinary Medical Association., c1978, Oct. 1995, v. 36 (10), p. 658-660. ISSN: 0008-5286.

NAL Call no: 41.8 R3224

Descriptors: dogs, cats, pain, treatment, analgesics, opioids.

Dyson, D.H., (1990), **Update on butorphanol tartrate: use in small animals.** *Canadian Veterinary Journal*, Ottawa: Canadian Veterinary Medical Assoc., Feb. 1990, v. 31 (2), p. 120-121. ISSN: 0008-5286.

NAL Call no: 41.8 R3224

Descriptors: dogs, cats, analgesics, dosage, drug effects, anesthesia, pain.

Flecknell, P.A., (1984), **The relief of pain in laboratory animals.** *Laboratory Animals*, London. Essex: Laboratory Animal Science Assoc., Apr. 1984, v. 12 (2), p. 147-160. ISSN: 0023- 6772.

NAL Call no: QL55.A1L3

Descriptors: laboratory animals, pain, analgesics.

Flecknell, P.A.; Liles, J.H.; Williamson, H.A., (1990), **The use of lignocaine-prilocaine local anaesthetic cream for pain-free venipuncture in laboratory animals.** *Laboratory Animals*, London: Royal Society of Medicine Services, Apr. 1990, v. 24 (2), p. 142-146.

ISSN: 0023-6772.

NAL Call no: QL55.A1L3

Descriptors: laboratory animals, local anesthetics, lidocaine, intravenous injection, ointments, local anesthesia.

Flecknell, P.A., (1987), *Laboratory Animal Anaesthesia*. Academic Press, Ltd., London. 156 p. ISBN: 0122603605.

NAL Call no: SF77.F5

Descriptors: laboratory animals, anaesthesia.

Flecknell, P.A., (1996), *Laboratory Animal Anaesthesia*, 2nd ed. Academic Press, Ltd., London. 274 p. ISBN: 0122603613.

NAL Call no: SF77.F54 1996

Descriptors: laboratory animals, anaesthesia.

Green, C.J., (1987), **Anaesthesia & analgesia.** *Laboratory Animals: An Introduction for New Experimentors*, Edited by A.A. Tuffery, Chichester, Eng.: Wiley, c1987, p. 201-301, ill.

ISBN: 0471912972.

NAL Call no: QL55.L274

Descriptors: laboratory animals, animal welfare, anesthesia, analgesics, pain, stress, pharmacokinetics.

Gluckstein, Fritz P., (1987), **Pain, anesthesia & analgesia in common laboratory animals.** Jan. 1980 through Dec. 1986, 514 citations. Bethesda, MD: U.S. Dept. Of Health & Human Services, Public Health Service, NIH, (1987), p.45. Literature search no. 86-17.

NAL Call no: Z7994.L3G5

Descriptors: laboratory animals bibliography, animal experimentation bibliography, pain bibliography, analgesia bibliography, veterinary anesthesia bibliography.

**Humane endpoints in animal experiments for biomedical research.** (1999), Proceedings of the International Conference, 22 - 25 Nov. 1998, Zeist, The Netherlands. Edited by Coenraad F. M. Hendricksen and David B. Morton, Laboratory Animals Ltd. The Royal Society of Medicine Press, Ltd. 150 p. ISBN: 1853154296.

NAL Call no: HV4704.H85 1999

Descriptors: humane endpoints, animals, experiments, biomedical research.

Laties, V.G., (1987), **Control of animal pain & distress in behavioral studies that use food deprivation or aversive stimulation.** *Journal of the American Veterinary Medical Association*, Nov. 15, 1987, v. 191 (10), p. 1290-1291. ISSN: 0003-1488.

NAL Call no: 41.8 AM3

Descriptors: laboratory animals, pain, stress, animal behavior, animal experiments, restricted feeding.

Manser, Caroline E., (1992), *The assessment of stress in laboratory animals.* London, Royal Society for the Prevention of Cruelty to Animals, (RSPCA), 1992, 208 p., ill.

NAL Call no: SF406.M36 1992

Descriptors: laboratory animals, animal welfare.

McKee, M., (1996), **Cervical pain in small animals.** *In Practice.*, London: British Veterinary. Association, 1979-Apr. 1996, v. 18 (4), p. 169-171, 173-177, 179-180, 183-184. ISSN: 0263-841X.

NAL Call no: SF601.I4

Descriptors: dogs, spine, pain, spinal cord, radiography, spondylitis, trauma, degeneration, neoplasms, meningitis, drug therapy.

Merkenschlager, M.; Hiller, H.H., (1975), **Pain elimination in laboratory animals.** *Berliner und Munchener Tierarztliche Wochenschrift*, Aug. 1, 1975, v. 88 (15), p. 289-295.

Language: German with a summary in English.

NAL Call no: 41.8-B45

Descriptors: pain, laboratory animals, elimination, control.

Montgomery, C.A. Jr, (1987), **Control of animal pain & distress in cancer & toxicological research.** *Journal of the American Veterinary Medical Association*, Nov. 15, 1987, V. 191 (10), p. 1277-1281. ISSN: 0003-1488.

NAL Call no: 41.8 AM3

Descriptors: laboratory animals, pain, stress, animal experiments, experimental design, animal husbandry, carcinoma, toxicology.

Morton, D.B., (1985), *The recognition of pain, distress & discomfort in small laboratory mammals & its assessment.* Leicester, England: Unit of Biomedical Services, University of Leicester, 1985, 23 leaves, Cover title "19.3.85" includes bibliographical references.

NAL Call no: HV4735.M67

Descriptors: laboratory animals, animal welfare, animal experimentation.

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Descriptors: laboratory animals, animal welfare, pain.

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NAL Call no: QL55.A1I43

Descriptors: laboratory animals, pain, animal welfare.

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NAL Call no: 410.9 P94

Descriptors: laboratory animals, animal experiments, pain, assessment.

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NAL Call no: 41.8 AU72 and 41.8 R3224

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Descriptors: pain management, dogs, cats, Denmark.

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Descriptors: dogs, cats, laboratory animals, rats, mice, pain, tests, drugs, drug effects, physiological functions.

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Descriptors: livestock, pain, animal welfare, domestic animals.

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NAL Call no: HV4704.A77  
Descriptors: laboratory animals, pain, assessment, neurophysiology, neurohormonal control, tissue analysis, animal welfare.

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NAL Call no: 41.8 AU72

Descriptors: sheep, pain, intramuscular analgesics.

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NAL Call no: HV4704.A54 1987

Descriptors: animal welfare, livestock, animal diseases, veterinarians, animal housing, pain, disease control.

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NAL Call no: HV4704.A77

Descriptors: laboratory animals, pain perception, drug effects, survival, consciousness, animal welfare, neurophysiology.

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NAL Call no: HV4704.A77

Descriptors: livestock, pain assessment, locomotion, posture, animal behavior, scales, animal welfare.

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NAL Call no: HV4704.A77

Descriptors: animal behavior, pain, assessment, experience, consciousness, learning.

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NAL Call no: 49 J82

Descriptors: lambs, calves, pain, surgical operations, tail, castration, autonomic nervous system, behavior, steroids, blood plasma.

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NAL Call no: HV4704.A77

Descriptors: laboratory animals, pain assessment, cerebral cortex, anesthesia, stunning, consciousness.

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Descriptors: anesthesia, pain, horses, management.

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Descriptors: domestic animals, euthanasia, animal welfare, pain.

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NAL Call no: 49 J82

Descriptors: livestock, animal husbandry, stress response, pain, learning, animal welfare, animal behavior, restraint of animals, animal experiments, transporting of animals.

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NAL Call no: QL750.A6

Descriptors: sheep, animal welfare, stress, transport of animals, learning, avoidance conditioning.

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NAL Call no: 41.8 C163

Descriptors: beef cattle, heifers, branding, hydrocortisone, pain, legs, pressure, movement, susceptibility, chemical composition, heat tolerance.

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NAL Call no: SF911.V43

Descriptors: systemic and local effects, morphine-detomidine, epidural catheterization

Varshney, J.P.; Uppal, P.K., (1993), **Clinical management of dietary colic with buprenorphine hydrochloride in equines.** National Research Center on Equines, Sirsa Road, Hisar-125 001, India. *Centaurus-Mylapore*, 1993, v. 9 (4), p. 88-89, 5 ref.

Descriptors: horse diseases, drug therapy, digestive system diseases, pain, colic, analgesics.

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NAL Call no: QL750.A6

Descriptors: piglets, pain, vocalization, castration, restraint of animals, animal welfare.

White, R.G.; J.A. DeSchazer; C.J. Tressler; G.M. Borchert; S. Davey; A. Waninge; A.M. Parkhurst; M.J. Milanuk & E.T. Clemens, (Feb. 1995), **Vocalizations & physiological response of pigs during castration with or without a**

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NAL Call no: 49 J82

Descriptors: anesthesia, local, orchiectomy, swine physiology, vocalization, animal physiology, blood pressure, drug effects, heart rate, respiration, stress, physiopathology, surgery.

Wiepkema, P.R., (1986), **Pain & stereotypes.** *Assessing pain in farm animals: Proceedings of a workshop held in Roslin, Scotland, 25-26 Oct. 1984*, edited by I.J.H. Duncan, V. Molony, Brussels: Directorate-General for Agriculture, Coordination of Agricultural Research, c1986, p. 62-70. ISBN: 9282565181.

NAL Call no: HV4704.A77

Descriptors: calves, animal behavior, veal, pain, stomach ulcer, endorphins, stress, response.

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NAL Call no: 41.8 R312

Descriptors: local anesthesia, naloxone, castration, tail docking.

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NAL Call no: HV4704.A77

Descriptors: livestock, pain, assessment, animal welfare, consciousness.

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NAL Call no: HV4704.A77

Descriptors: laboratory animals, pain, assessment, ethics, animal welfare, social behavior, research methodology, neurophysiology, animal behavior.

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## DOMESTIC FOWL

Hocking, P.M.; Gentle, M.J.; Bernard, R.; Dunn, L.N., (1997), **Evaluation of a protocol for determining the effectiveness of pretreatment with local analgesics for reducing experimentally induced articular pain in domestic fowl.** Roslin Institute (Edinburgh), Roslin, Midlothian, Scotland, *Research in Veterinary Science*, v. 63,(3), p.263-267. ISSN: 0034-5288.

NAL Call no: 41.8 R312

Descriptors: anesthetics, local therapeutic use, arthritis physiopathology, bupivacaine therapeutic use, pain, poultry diseases.

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Arena, P.C.; Richardson, K.C., (1990), **The relief of pain in cold-blooded vertebrates.** *Australian Council for the Care of Animals in Research and Teaching-News*, Canberra, A.C.T.: Australian Council for the Care of Animals in Research & Teaching (ACCART), Autumn 1990, v. 3 (1), p. 1-4.

NAL Call no: SF405.5.A3

Descriptors: vertebrates, fishes, amphibia, reptiles, pain, anesthesia, anesthetics.

Brown, L.A.; Scott, P.W.; Greenwood, A.G.(Eds), **Pain in fish: A review.** *Exotic animals in the eighties. Proceedings from the 25th Anniversary Symposium of the British Veterinary Zoological Society*, 18-20 April 1986. British Veterinary Zoological Society, place of publication not given. 1987: 1-64, chapter pagination: 107-110.

Descriptors: PISCES, physiological condition, pain, perception potential, sensory receptor, potential perception of pain, review.

Chervova, L.S., (1997), **Pain sensitivity & behavior of fish.** MGU, Moscow, Russia. *Journal of Ichthyology*, 1997, v. 37 (1), p. 98-102. ISSN: 0042-8725.

Translated from *Voprosy Ikhtiologii*, 1997, v. 37 (1), p. 106-111.

NAL Call no: SH1.J6

Descriptors: mechanical stimuli, electric stimuli, behavioral responses, inhibitors, neurophysiology, controlled conditions, *Gadus-morhua-marisalbi*, *Salmo-mykiss*, peptides.

Clark, T.R.; Nossov, P.C.; Aplan, J.P.; Filbert, M.G., **Anesthetic agents for use in the invertebrate sea snail, *Aplysia californica*.** *Contemporary Topics in Laboratory Animal Science*. Cordova, TN: The Association, 1992-Sept. 1996, v. 35 (5), p. 75-79. ISSN: 1060-0558.

NAL Call no: SF405.5.A23

Descriptors: marine animals, anesthetics, anesthesia, pain, efficacy.

Kestin, S.C., (1994), *Pain & stress in fish.* Amended. Royal Society for the Prevention of Cruelty to Animals. Horsham, West Sussex: RSPCA (1994) 36 p.

NAL Call no: SH177.S75K47 1994

Descriptors: fishes, effects of stress on; fishes physiology, pain, physiological aspects, fish culture, animal welfare.

Klausewitz, W., (1989), **Problems of sensitivity to pain & ability to suffer in fish.** Forschungs inst. Senckenberg, Senckenberganlage 25, D-6000 Frankfurt 1, FRG. *Fischoekologie*, 1989, v. 1, no. 1, p. 65-90.

Language: German

Descriptors: angling, neurophysiology, fish handling, fish physiology, freshwater fish, mechanical stimuli.

Klausewitz, W., (1995), **Pain, fear & ability to suffer in fish.** A problematic complex activated by the new German Animal Protection Law. *Fortschritte.-Fishereiwiss. Adv. Fish Science*. 1995 no. 12, p. 5-21. ISSN: 0233-1179.

Language: German

Descriptors: angling, legal aspects, biological stress, fish physiology, *Cyprinus carpio*, Germany.

Peters, G., (1988), **Pain & stress of fish.** Univ. Hamburg, Inst. Hydrobiol. und Fischereiwiss, Elbelab, Ausruestungskai 6, D-2000 Hamburg 50, FRG, *Deutsche Tierarztliche Wochenschrift*, 1988, v. 95, no. 2, p. 60-63.

Language: German

NAL Call no: 41.8 D482

Descriptors: sense functions, behavioral responses, sense organs, fish.

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Language: German

NAL Call no: 41.8 T445

Descriptors: fish handling, biological stress, sport fishing, aquaculture techniques, ornamental fish, hygiene, Teleostei.

Snow, P.J.; Plenderleith, M.B.; Wright, L.L., (1993), **Quantitative study of primary sensory neurone populations of three species of elasmobranch fish.** Cerebral & Sensory Functions Unit, Department of Anatomy Science, University of Queensland, St. Lucia 4072 Australia. *Journal of Comparative Neurology*, 1993, v. 334, no.1, p. 97-103. ISSN: 0021-9967.

NAL Call no: QP351.J68

Descriptors: dorsal root ganglia, sensory neurons, morphometry, Himantura, Rhinobatus battilum, Carcharhinus melanopterus, neurophysiology, sense organs, ultrastructure, elasmobranch fish.

Terril-Robb, L.A.; Suckow, M.A.; Grigdesby, C.F., (1996), **Evaluation of the analgesic effects of butorphanol tartrate, xylazine hydrochloride, & flunixin meglumine in leopard frogs (Rana pipiens).** *Contemporary Topics in Laboratory Animal Science.*, Cordova, TN: the Association, 1992-May 1996, v. 35 (3), p. 54-56. ISSN: 1060-0558.

NAL Call no: SF405.5.A23

Descriptors: rana pipiens, laboratory animals, xylazine, flunixin, analgesics, pain, duration, dosage, injection, animal welfare.

Von-Berneth, E.M.; Wormuth, H.J., (1990), **Animal protection aspects of killing fish.** Institute. Veterinaarmed. (Robert-von-Ostertag-Inst.), Bundesgesundheitsamtes Berlin, FRG. *Deutsche-Tierarztliche-Wochenschrift*, 1990, v. 97 no. 4, p. 154-157.

Language: German

NAL Call no: 41.8 D482

Descriptors: government policy, mortality causes, commercial species, fishery technology, fish handling, processing fishery products, Germany.

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## GUINEA PIGS

Louie, A.; Liu, W.; Liu, Q.F.; Sucke, A.C.; Miller, D.A.; Battles, A.; Miller M.H., (1997), **Predictive value of several signs of infection as surrogate markers for mortality in a neutropenic guinea pig model of Psuedomonas aeruginosa sepsis.** *Laboratory Animal Science.*, Cordova, TN: American Association for Laboratory Animal Science, Dec. 1997, v. 47 (6), p. 617-623. ISSN: 0023-6764.

NAL Call no: 410.9 P94

Descriptors: animal models, psuedomonas aeruginosa, sepsis, surrogate markers, mortality, prediction, weight loss, food intake, water intake, imipenem, tobramycin, ceftazidime, antibiotics.

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## MICE

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NAL Call no: QL55.A1L3

Descriptors: mice, biliary calculi, pain, symptoms, animal husbandry, animal housing, diets.

Bryant, H.U.; Bernton, E.W.; Holoday, J.W., (1987), **Immunosuppressive effects of chronic morphine treatment in mice.** Walter Reed Army Institute of Research, Washington, DC, Neuropharmacology Branch. *Life Sciences*, v. 41 (14), p. 1731-1738, 1987.

Descriptors: animals, antibodies, behavior, cells-biology, immunosuppression, morphine, pain, mice, interferon, pharmacokinetics.

Land, C.J. van't; Hendricksen, C.F.M., (1995), **Change in locomotor activity pattern in mice: A model for recognition of distress.** *Laboratory Animals*, London: Royal Society of Medicine Press Ltd., July 1995, v. 29 (3), p. 286-293. ISSN: 0023-6772.

NAL Call no: QL55.A1L3

Descriptors: mice, stress assessment, locomotion, behavior patterns, nocturnal activity, adjuvants, adverse effects, weight reduction, dosage effects, models.

Leenaars, P.P.A.M.; Koedam, M.A.; Wester, P.W.; Baumans, V.; Claassen, E.; Hendricksen, C.F.M., (1998), **Assessment of side effects induced by injection of different adjuvants/antigen combinations in rabbits & mice.** *Laboratory Animals*, London: Royal Society of Medicine Press Ltd. Oct. 1998, v. 32 (4), p.387-406. ISSN: 0023-6772.

NAL Call no: QL55.A1L3

Descriptors: rabbits, mice, adverse effects, adjuvants, antigens, pain, lesions, antibody formation, SQ injection, intraperitoneal injection.

Loo, P.L.P. van; Everse, L.A.; Bernsen, M.R.; Baumans, V.; Hellebrekers, L.J.; Kuitwagen, C.L.J.J; Otter, W. den, (1997), **Analgesics in mice used in cancer research: Reduction of discomfort.** *Laboratory Animals*, London: Royal Society of Medicine Press Ltd., Oct. 1997, v. 31 (4), p. 318-325. ISSN: 0023-6772.

NAL Call no: QL55.A1L3

Descriptors: mice, analgesics, animal experiments, water intake, pain, animal welfare, neoplasms, animal behavior, feed intake.

Miyachi, Y., (1997), **Analgesia induced by repeated exposure to low dose x-rays in mice, & involvement of the accessory olfactory system in modulation of the radiation effects.** *Brain Research Bulletin*, 1997, v. 44 (2), p. 177-182. ISSN: 0361-9230.

Descriptors: analgesia, low dose x-ray, mice.

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## MONKEYS & APES

de Wall, F.B.; Aureli, F., (1997), **Conflict resolution & distress alleviation in monkeys & apes.** *Annals of the New York Academy of Science*, 1997 Jan. 15, v. 807, p. 317-328.

ISSN: 0077-8923

NAL Call no: 500 N484

Descriptors: conflict resolution, distress, alleviation, monkeys, apes.

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## NON DOMESTIC ANIMALS

Jalanka, H.H., (1992), **Physiologic responses to medetomidine, medetomidine-ketamine combinations, & atipamezole in nondomestic animals.** Short, C.E. and van Poznak, A., (Eds). *Animal pain*, Churchill Livingstone, N.Y., 1992, p. 220-224. ISBN: 0443087725.

NAL Call no: SF910.P34A55 1992

Descriptors: zoo animals, game animals, drugs, drug effects, dosage, dosage effects, analgesics, physiological functions, immobilization, drug combinations, ketamine, adverse effects.

Thurmon, J.C.; Tranquilli, W.J.; Benson, G.J., (1992), **Alpha 2 -Antagonist use in domestic & wild animal species.** *Animal pain*, edited by Charles E. Short, Alan van Poznak, N.Y.: Churchill Livingstone, 1992, p. 237-247. ISBN: 0443087725.

NAL Call no: SF910.P34A55 1992

Descriptors: domestic animals, wild animals, agonists, xylazine, anesthetics, drug combinations, analgesics, ketamine, yohimbine, 4-aminopyridine, antagonists.

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## POST OPERATIVE PAIN

Brown, M.J.; Schofield, J.C., (1990), **Perioperative care.** *Essentials for animal research: A primer for research personnel*, by B.T. Bennett, M.J. Brown & J.C. Schofield, Beltsville, MD, National Agricultural Library, 1990, p. 79-88.

NAL Call no: QL55.B36

Descriptors: laboratory animals, surgical operations, animal husbandry, animal welfare, pain, perioperative care, intraoperative care, post operative care.

Crane, S.W., (1987), **Perioperative analgesia: A surgeon's perspective.** *Journal of the American Veterinary Medical Association*, Schaumburg, IL: the Association, Nov. 15, 1987, v. 191 (10), p. 1254-1257. ISSN: 0003-1488.

NAL Call no: 41.8 AM3

Descriptors: animals, pain, analgesics, surgical operations.

Doohoo, S.E.; Doohoo, I.R., (1998), **Attitudes & concerns of Canadian animal health technologists toward post operative pain management in dogs & cats.** *Canadian Veterinary Journal*, 1998 Aug., v. 39 (8), p.491-496. ISSN: 0008-5286.

NAL Call no: 41.8 R3224

Descriptors: attitudes, concerns, pain management, post operative.

Doohoo, S.E.; Doohoo, I.R., (1996), **Postoperative use of analgesics in dogs & cats by Canadian veterinarians.** *Canadian Veterinary Journal*, 1996, v. 37 (9), p. 546-551, 11 ref. ISSN: 0008-5286.

NAL Call no: 41.8 R3224

Descriptors: analgesics, post operative, dogs, cats.

Fezza, John P.; Klippenstein, Kimberly A.; Wesely, Ralph E., (1999), **Use of an orbital epidural catheter to control pain after orbital implant surgery.** *Archives of Ophthalmology*, June, 1999, v. 117 (6), p. 784-788. ISSN: 0003-9950.

NAL Call no: 448.8 AR291

Descriptors: retrobulbar hemorrhage, eye disease.

Flecknell, P.A., (1985), **The management of post-operative pain & distress in experimental animals.** *Journal of the Institute of Animal Technology*, (Sussex): the Institute of Animal Technology, Nov. 1985, v. 36 (2), p. 97-103. ISSN: 0264-4754.

NAL Call no: QL55.I5

Descriptors: laboratory animals, pain, standards, improvement, analgesics, surgical operations, animal welfare, anesthetics.

Flecknell, P.A., (1991), **Postoperative analgesia in rabbits & rodents.** *Lab Animal.*, N.Y.: Nature Publishing Company, Oct. 1991, v. 20 (9), p. 34-37. ISSN: 0093-7355.

NAL Call no: QL55.A1L33

Descriptors: laboratory animals, postoperative care, pain, analgesics.

Flecknell, P.A.; Kirk, A.J.B.; Liles, J.H.; Hayes, P.H.; Dark, J.H., (1991), **Post-operative analgesia following thoracotomy in the dog: An evaluation of the effects of bupivacaine intercostal nerve block & nalbuphine on respiratory function.** *Laboratory Animals*, London: Royal Society of Medicine Services, Oct. 1991, v. 25 (4), p. 319-324. ISSN: 0023-6772.

NAL Call no: QL55.A1L3

Descriptors: dogs, postoperative care, pain, analgesics, duration, blood gases.

Flecknell, P., (1997), **Assessment & alleviation of post-operative pain.** *Animal Welfare Information Center Newsletter (USA)* Winter 1997-1998, v. 8 (3/4), p. 8-14. ISSN: 1050-561X.

NAL Call no: aHV4701.A952

Descriptors: laboratory animals, mammals, surgical operations, pain, analgesics, dosage.

Gaynor, J.S., (1999), **Is postoperative pain management important in dogs & cats?** *Veterinary Medicine*, 1999, v. 94 (3), p. 254-258, 24 ref.

NAL Call no: 41.8 M69

Descriptors: post operative pain, management, dogs, cats.

Hall, L.W., (1992), **Postoperative pain control in hospitalized & out patient animals.** *Animal pain*, edited by Charles E. Short, Alan van Poznak, N.Y.:Churchill Livingstone, 1992, p. 353-357, 362. ISBN: 0443087725.

NAL Call no: SF910.P34A55 1992

Descriptors: animals, postoperative care, surgical operations, drug delivery systems, pain, analgesics, anesthetics.

Jerram, R.M.; Hart, R.C.; Schulz, K.S., (1997), **Postoperative management of the canine spinal surgery patient. Part I. Compendium on Continuing Education for the Practicing Veterinarian**, 1997, v. 19 (2), p. 147-161, 40 ref. ISSN: 0193-1903.

NAL Call no: SF601.C66

Descriptors: canine, spinal surgery, postoperative management.

Kuchinka, G.D.; Riedesel, D.H., (1994), **Management of acute postoperative pain in dogs & cats.** *Iowa State University Veterinarian*, 1994, v. 56 (2), p. 71-76, 20 ref. ISSN: 0099-5851.

NAL Call no: 41.8 V6425

Descriptors: analgesics, drug therapy, animal welfare, pain.

Liles, J.H.; Flecknell, P.A., (1993), **The influence of buprenorphine or bupivacaine on the post-operative effects of laparotomy & bile duct ligation in rats.** *Laboratory Animals*, London: Royal Society of Medicine Services, Oct. 1993, v. 27 (4), p. 374-380. ISSN: 0023-6772.

NAL Call no: QL55.A1L3

Descriptors: rats, analgesics, postoperative care.

Sawyer, D.C., (1990), **Use of analgesics for post-surgical pain in dogs & cats.** *Anesthesia & analgesia in laboratory animals proceedings-1990 Forum*, American College of Laboratory Animal Medicine, Columbia, MD, May 3-6, 1990. American College of Laboratory Animal Medicine, 1990?, p. 93-99.

NAL Call no: SF914.A53 1990

Descriptors: dogs, cats, analgesics.

Slingsby, L.S.; Lane, E.C.; Mears, E.R.; Shanson, M.R.; Waterman-Pearson, A.E., (1998), **Postoperative pain after ovariohysterectomy in the cat: A comparison of two anaesthetic regimens.** *Veterinary Record*, London: The British Veterinary Association, Nov. 21, 1998, v. 143 (21), p. 589-590. ISSN: 0042-4900.

NAL Call no: 51.8 V641

Descriptors: cats, pain, ovariectomy, hysterectomy, anesthesia, medetomidine, ketamine, acepromazine, thiopental.

Pascoe, P.J., (1992), **Control of postoperative pain in animals receiving inhalant anesthetics.** *Animal pain*, edited by Charles E. Short, Alan van Poznak, N.Y.: Churchill Livingstone, 1992, p. 348-352, 361-362. ISBN: 0443087725.

NAL Call no: SF910.P34A55 1992

Descriptors: animals, postoperative care, pain, inhaled anesthetics, anesthetics, local anesthetics, opioids, analgesics, agonists.

Randolph, M.M., (1994), **Post-operative care & analgesia of farm animals used in biomedical research.** *Animal Welfare Information Center Newsletter*, Beltsville, MD, National Agricultural Library, AWIC, 1990-Spring 1994, v. 5 (1), p. 11-13. ISSN: 1050-561X.

NAL Call no: aH4701.A952

Descriptors: livestock, postoperative care, medical research, analgesics, pain, animal Welfare.

Vainio, O.; Ojala, M., (1994), **Medetomidine, an alpha 2-agonist, alleviates post-thoracotomy pain in dogs.** *Laboratory Animals*, London, 1994 Oct., v. 28 (4), p. 369-375. Orion Corp., P.O. Box 425, SF 20101 Turku, Finland. ISSN: 0023-6772.

NAL Call no: QL55.A1L3

Descriptors: medetomidine, pain, alleviation, dogs.

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## RABBITS

Danneman, P.J.; White, W.J.; Marshall, W.K.; Lang, C.M., (1988), **An evaluation of analgesia associated with the immobility response in laboratory rabbits.** *Laboratory Animal Science*, Cordova, TN: American Association for Laboratory Animal Science, Feb. 1988, v. 38 (1). p. 51-57. ISSN: 0023-6764.

NAL Call no: 410.9 P94

Descriptors: rabbits, analgesics, restraint of animals, immobilization.

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Abbott, F.W.; Bonder, M., (1997), **Options for management of acute pain in the rat.** *Veterinary Record*, 1997, v. 140 (21), p. 553-557. 58 ref. ISSN: 0042-4900.

NAL Call no: 41.8 V641

Descriptors: pain management, rat, options.

Beynen, A.C.; Baumans, V.; Bertens, A.P.M.G.; Haas, J.W.M.; Hellemond, K.K. van; Herck, H. van; Peters, M.A.W.; Stafleu, F.R.; Tintelen, G. van. (1988), **Assessment of discomfort in rats with hepatomegaly**. *Laboratory Animals*, London: Royal Society of Medicine Services, Oct. 1988, v. 22 (4), p. 320-325. ISSN: 0023-6772.

NAL Call no: QL55.A1L3

Descriptors: rats, hepatomegaly, pain, assessment.

Brewer, K.L.; Yeziarski, R.P., (1998), **Effects of adrenal medullary transplants on pain related behaviors following excitotoxic spinal cord injury**. *Brain Research*, July, v. 798 (1-2), p. 83-92. ISSN: 0006-8993.

NAL Call no: Film S-1779

Descriptors: pain, adrenal medullary transplants, spinal cord injury.

Danneman, P.J.; Mandrell, T.D., (1997), **Evaluation of five agents/methods for anesthesia of neonatal rats**. *Laboratory Animal Science*, Cordova, TN: American Association for Laboratory Animal Science, Aug. 1997, v. 47 (4), p. 386-395. ISSN: 0023-6764.

NAL Call no: 410.9 P94

Descriptors: rats, newborn animals, droperidol, methoxyfluthane, ketamine, pentobarbital, fentanyl, combination, anesthesia, induction, hypothermia, efficacy, safety.

Danneman, P.J.; Stein, S.; Walshaw, S.O., (1997), **Humane & practical implications of using carbon dioxide mixed with oxygen for anesthesia or euthanasia of rats**. ISSN: 0023-6764.

NAL Call no: 410.9 P94

Descriptors: rats, laboratory animals, man, carbon dioxide, oxygen, mixtures, anesthesia, euthanasia, pain, histology, animal welfare.

Hama, A.T.; Sagen, J., (1994), **Alleviation of neuropathic pain symptoms by xenogeneic chromaffin cell grafts in the spinal subarachnoid space**. *Brain Research*, 1994, Jul. 18, v. 651 (1-2), p. 183-193. ISSN: 0006-8993.

NAL Call no: Film S-1779

Descriptors: alleviation, neuropathic pain, cell grafts.

Hayes, J.H.; Flecknell, P.A., (1999), **A comparison of pre- & post-surgical administration of bupivacaine or buprenorphine following laparotomy in the rat**. *Laboratory Animals*, London: Royal Society of Medicine Press Ltd., Jan.1999, v. 33 (1), p. 16-23. ISSN: 0023- 6772.

NAL Call no: QL55.A1L3

Descriptors: rats, local anesthetics, opioids, analgesics, postoperative care, timing, body weight, feed intake, water intake, physical activity, laparotomy, pain.

Ibuki, T.; Hama, A.T.; Wang, X.T.; Pappas, G.D.; Sagen, J., (1997), **Loss of GABA immunoreactivity in the spinal dorsal horn of rats with peripheral nerve injury & promotion of recovery by adrenal medullary grafts**. *Neuroscience*, 1997 Feb., v. 76 (3), p. 845-858. ISSN: 0306-4522.

NAL Call no: QP351.N48

Descriptors: nerve injury, immunoreactivity, adrenal medullary grafts.

Liles, J.H.; Flecknell, P.A., (1993), **The effects of surgical stimulus on the rat & the influence of analgesic treatment**. *British Veterinary Journal*, London: Bailliere Tindall, Nov./Dec. 1993, v. 149 (6), p. 515-525. ISSN: 0007-1935.

NAL Call no: 41.8 V643

Descriptors: pain, surgery, abdomen, analgesics, opioids, food intake, water intake, body weight, locomotion, rats.

Liles, J.H.; Flecknell, P.A., (1993), **Pain assessment and relief in rats**. *Welfare and science proceedings of the Fifth Symposium of the Federation of European Laboratory Animal Science Associations Symposium*, London Royal Society of Medicine Press, 1994, p. 14-19. ISBN: 1853152404.

NAL Call no: QL55.F43 1993

Descriptors: pain assessment, pain relief, rats.

Parris, W.C.; Janicki, P.K.; Johnson, B. Jr; Horn, J.L., (1996), **Intrathecal ketorolac tromethamine produces analgesia after chronic constriction injury of sciatic nerve in rat.** *Canadian Journal of Anaesthesia*, Aug. 1996, v, 43 (8), p. 867-870. ISSN: 0832-610X.

Descriptors: analgesia, sciatic nerve, ketorolac tromethamine.

Siegan, J.B.; Sagen, J., (1997), **Attenuation of the formalin pain responses in the rat by adrenal medullary transplants in the subarachnoid space.** *Pain*, 1997 Apr., v. 70 (2-3), p. 0304-3959. ISSN: 0304-3959.

NAL Call no: RB127.P34

Descriptors: pain responses, attenuation, adrenal medullary transplants.

Smith, W.; Harrap, S.B., (1997), **Behavioral & cardiovascular responses of rats to euthanasia using carbon dioxide gas.** *Laboratory Animals*, London: Royal Society of Medicine Press Ltd., Oct. 1997, v. 31 (4), p. 337-346. ISSN: 0023-6772.

NAL Call no: QL55.A1L3

Descriptors: rats euthanasia, carbon dioxide, heart rate, blood pressure, oxygen, animal behavior, death.

Wixson, S.K.; White, W.J.; Hughes, H.C. Jr; Marshall, W.K.; Lang, C.M., (1987), **The effects of pentobarbitol, fentanyl-droperidol, ketamine-xylazine & ketamine-diazepam on noxious stimulus perception in adult male rats.** *Laboratory Animal Science*, Cordova, TN: American Association for Laboratory Animal Science, Dec. 1987, v. 37 (6), p. 731- 735. ISSN: 0023-6764.

NAL Call no: 410.9 P94

Descriptors: rats, male animals, pentobarbitol, fentanyl, droperidol, ketamine, xylazine, diazepam, pain, drug effects.

Yu, W.; Hao, J.X.; Xu, X.J.; Saydoff, J; Haegerstrand, A.; Hokfelt, T.; Wiesenfeld-Hallin, Z., (1998), **Long-term alleviation of allodynia-like behaviors by intrathecal implantation of bovine chromaffin cells in rats with spinal cord injury.** *Pain*, 1998 Feb., v. 74 (2-3), p. 15-22. ISSN: 0304-3959.

NAL Call no: RB127.P34

Descriptors: alleviation. allodynia-like behaviors, spinal cord injury.

Zeller, W.; Weber, H.; Panoussis, B.; Burge, T.; Bergmann, R., (1998), **Refinement of blood sampling from the sublingual vein of rats.** *Laboratory Animals*, London: Royal Society of Medicine Press Ltd., Oct. 1998, v. 32 (4), p. 369-376. ISSN: 0023-6772.

NAL Call no: QL55.A1L3

Descriptors: rats, blood sampling, pain, veins, animal welfare, body weight, blood volume, hematocrit, feed intake, water intake, erythrocyte count.

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Baumans, V.; Brain, P.F.; Brugere, H.; Jeneskog, T.; Perretta, G., (1994), **Pain & distress in laboratory rodents & lagomorphs:** Report of the Federation of European Laboratory Animal Science Association (FELASA) Working Group on pain & distress accepted by the FELASA Board of Management, November 1992. *Laboratory Animals*., London: Royal Society of Medicine Press Ltd., Apr. 1994, v. 28 (2), p. 97-112. ISSN: 0023-6772.

NAL Call no: QL55.A1L3

Descriptors: laboratory animals, rodents, lagomorphs, animal welfare, pain measurements, symptoms, law, rabbits.

Beynen, A.C.; Baumans, V.; Herdk, H. van; Stafleu, F.R., (1989), **Assessment of discomfort in laboratory rodents.** Proceeds of a symposium organized by Universities Federation for Animal Welfare, held at the Royal Holloway & Bedford New College, Univ. of London, Egham, Surrey, 22nd April 1988. Potters Bar: *Universities Federation for*

*Animal Welfare*, c1989. p. 64-70. ISBN: 0900767588.

NAL Call no: QL55.L342

Descriptors: rodents, laboratory animals, animal welfare, pain.

Flecknell, P.A.; Liles, J.H., (1992), **Evaluation of locomotor activity & food & water consumption as a method of assessing postoperative pain in rodents.** *Animal pain*, edited by Charles E. Short, Alan Van Poznak. New York: Churchill Livingstone, 1992, p. 482-488, 505-506. ISBN: 0443087725.

NAL Call no: SF910.P34A55 1992

Descriptors: laboratory animals, pain, rodents, post operative complications, postoperative care, locomotion, anesthetics, water intake, drug effects, surgical operations, food intake, adverse effects.

Golombek, D.A.; Pevet, P.; Cardinali, D.P., (1996), **Melatonin effects on behavior: Possible mediation by the central GABAergic system.** *Neuroscience & Behavioral Reviews*, 1996, v. 20 (3), p. 403-412. ISSN: 0149-7634.

NAL Call no: QL750.B5

Descriptors: melatonin effects, behavior, mediation.

Liles, J.H.; Flecknell, P.A., (1992), **The use of non-steroidal anti-inflammatory drugs for the relief of pain in laboratory rodents & rabbits.** *Laboratory Animals*, London: Royal Society of Medicine Services, Oct. 1992, v. 26 (4), p. 241-255. ISSN: 0023-6772.

NAL Call no: QL55.A1L3

Descriptors: mice, rabbits, pain, anti-inflammatory agents, analgesics, dosage, adverse effects.

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