Virginia Cooperative Extension Service

VIRGINIA VETERINARY NOTES

VIRGINIA-MARYLAND REGIONAL COLLEGE OF VETERINARY MEDICINE

March - April 1995 No. 74

WHAT'S INSIDE!

Kent C. Roberts

Kent C. Roberts, DVM
Extension Veterinarian

PROTEIN FOR THE PERFORMANCE HORSE

Considerable research on nutrition in the performance horse has been conducted in the last decade, but certain myths still persist. One of the myths is that extra protein in the ration will enhance speed and stamina in hard-working horses such as racehorses. Most research does not support this myth. There is no conclusive evidence that the adult equine athlete three years of age or older requires protein levels higher than those required for body maintenance.

Two field surveys conducted on Thoroughbred and Standardbred horses in Michigan indicated that racehorses in many stables were fed from 27 to 76% more crude protein (CP) than recommended by the National Research Council (NRC) in the 1989 edition of *Nutrient Requirements of Horses*. There have also been investigations of competitive trail horses indicating that excessive protein (twice the recommended level) had a detrimental effect on performance due to elevated acid levels in the body and early fatigue. Other nutritionists suggest that excessive protein in exercising horses can increase urea and ammonia levels in the blood, possibly leading to metabolic problems with carbohydrate utilization and even potentially causing an enterotoxemia.

The current NRC recommendation for the adult race horse is in the range of 10-12% CP in the total ration. This might seem low, but it is adequate for maintenance and performance. More attention should be placed on the amount and quality of protein in the ration rather than just on the percentage. Nutritionist now express a correlation between the amount of protein in the feed and levels of digestible energy (DE). As the horse works harder, the feed is increased to provide more DE, and this automatically increases the CP -- even if it is present at a relatively low percentage rate.

If the DE level of a ration in megacalories (Mcal) is known, the recommended amount of protein can be determined by calculating 40 grams (g) per Mcal. In the field surveys mentioned above, the Standardbreds had a mean bodyweight of 449 kg. They had a mean consumption of 37.6 Mcal of DE and 2,113 of protein, with a mean total CP in the ration of 14.5%. They were consuming more protein than recommended by the NRC, but apparently they were not suffering any damaging effects. Staying in the range of 10-12% CP should provide an adequate amount in the ration, and the upper limit should be 15% CP in the total ration of adult working performance horses, unless there is a specific reason for increasing the percentage.

A typical ration for an adult performance horse that contains average quality legume or legume/grass hay and grain should not require extra supplementation of protein to meet NRC recommendations. Any CP provided that exceeds the requirement is converted to a source of energy that adds to the cost of the ration because it is always less expensive to provide energy from carbohydrates or fat. **--Ken Gallagher, DVM, Equine Extension Veterinarian, Michigan State University, as reported in Vet Med, Vol. 1, Issue I, Jan. 1995, Iowa State University, Ames, IA.**

ALLERGY TESTING FOR SKIN DISEASE IN THE CAT: IN VIVO VS IN VITRO TESTS

The results of *in vitro* and *in vivo* tests for 36 cats with signs suggestive of allergic skin disease were compared. The cats were presented with a variety of skin conditions. Intradermal skin testing with flea extract alone (6 cats) or compared with a panel of 40 inhalent allergens (30 cats) was employed. Serum samples were tested with a commercial IgE ELISA against flea extract and 36 inhalant allergens. A diagnosis of flea bite hypersensitivity was made in 18 cats, atopic disease in 9 cats, and hypersensitivity in 1 cat. Intradermal skin testing gave a positive predictive value in over 85% of flea allergic cases and 100% of atopic cases; the IgE ELISA test documented relatively low predictive values for the flea allergy and atopic disease and was not considered to be a useful diagnostic test. **--Abstracted from Foster, A., et al., Vet. Derm. 4 (1994) p 111-115, as reported in Vet Med, Vol. 1, Issue I, Jan. 1995, Iowa State University, Ames, IA.**

ASSOCIATION OF AGE AND BODY WEIGHT WITH PERIODONTAL DISEASE IN NORTH AMERICAN DOGS

Thirteen hundred and fifty dogs were examined under anesthesia at veterinary hospitals in the USA and Canada. Periodontal health was recorded in detail. Teeth were frequently absent (particularly lower third molar, upper and lower first premolars, and incisor teeth). Calculus was most extensive on the upper fourth premolar and molar teeth. Missing teeth, mobility of remaining teeth, extent of calculus and gingival inflammation, and furcation exposure and attachment loss all were more common in small dogs compared with larger dogs, and in older dogs compared with younger dogs. **--Abstracted from Harvey, C., et al., J. Vet. Dent. 3 (1994) p 94-105, as reported in Vet Med, Vol. 1, Issue I, Jan. 1995, Iowa State University, Ames, IA.**

OHE PRECAUTIONS FOR POT-BELLIED PIGS

Ovariohysterectomy (OHE) in the pot-bellied pig (PBP) should be delayed until the female experiences one or two estrous cycles and until 7 to 10 days after termination of estrus. Onset of puberty in PBPs is usually at 3 to 4 months of age; therefore, earliest OHE timing would be about 1 month later (21-day average estrous cycle plus 7 to 10 days after the end of "heat") or at 4 to 5 months of age.

During estrus, the vasculature within the broad ligaments to the uterine horns can be very developed and requires extensive ligation to control hemorrhage. Note that pet pig owners will most probably request spaying at the time of "crankiness" associated with estrus and at the time of increased vascularity of the reproductive tract. Simply wait 7 to 10 days after the end of estrus to avoid this risk.

Spaying a PBP before puberty can be accomplished, but the reproductive tract is very small, hard to find, and friable. In addition, the incomplete removal of the ovaries is a risk. Subsequent estrous behavior with erratic heat cycles or persistent heat may follow, but may be delayed 3 to 6 months or more after incomplete OHE. Also, losing a detached portion of complete or partial ovary can lead to similar complications. Attachment of "loose" ovarian tissue to the peritoneal lining and development of an aberrant cystic ovary may result. Surgical removal of remaining ovarian tissue is remedial, but locating such tissue may be very difficult.

The type of anesthesia also influences the success rate of OHE in PBPs. Isoflurane allows excellent muscle relaxation for location of structures within the abdominal cavity. OHE may be accomplished after injectable anesthesia with xylazine and Telozol®, but less muscle relaxation and short duration of anesthesia are two limitations compared to gas anesthesia. **--From Bruce Lawhorn, DVM, MS, Associate Professor and Extension Swine Veterinarian, Texas Agricultural Extension Service, The Texas A&M University System, as reported in Veterinary Quarterly Review, Vol. 10, No. 4, October-December 1994.**

WHAT'S THE BEST WAY TO NEGOTIATE?

The Harvard Negotiating team indicates that the best way to negotiate is:

- Stand in the other person's shoes.
- Focus on interests, not positions.
- Think of creative solutions for mutual gain.
- Use standards of fairness.

UPDATE ON HEARTWORM DISEASE DIAGNOSIS

Since 1985, antigen-detection tests have been used by practitioners to diagnose adult heartworm infections and demonstrate successful removal of adult heartworms after treatment. During the past seven years, the use of once-a-month heartworm preventatives such as Heartguard (ivermectin 6 to 12 mg/Kg) and Intercepter (milbemycin 500 to 999 mg/Kg) have replaced the daily-dosed diethylcarbamazine citrate. Because of these new preventatives (called macrolides), it became necessary for practitioners to utilize heartworm antigen-detection testing in addition to microfilarial detection tests (such as modified Knotts or filter test) to successfully diagnose heartworms. This is because macrolides minimize or eliminate microfilaria in dogs that have reproductively active adult heartworms and cause temporary sterility in adult heartworms that have never produced microfilaria. Such an occult heartworm infection (with adult heartworms but no detectable microfilaria) may develop in dogs within 6 months of starting once-a-month preventative and extend for 6 months after stopping monthly preventative administration.

The diagnostic interpretation of the joint use of the modified Knotts and antigen test for heartworm infection has been recently summarized and is as follows:

Microfilaria Pos/Antigen Pos

1. Heartworm infection with adults and microfilaria..

Microfilaria Pos/Antigen Neg

1. False-positive Knotts test (this occurs in about 1 percent of all cases), no adult heartworms.
2. Low numbers of microfilaria and adults.
3. Newly acquired heartworm infection (during past 6 months), adult heartworms present.
4. Immune response eliminated antigen from circulation, heartworm infection with adults and microfilaria.
5. Microfilaria obtained via prenatal transfer from bitch with microfilaria, no adult heartworms.
6. Dirofilaria reconditum or microfilaria other than Dirofilaria immitis, no adult heartworms.

Microfilaria Neg/Antigen Pos

1. False-positive antigen test due to erroneous technique, no microfilaria or adult heartworms.
2. Adults of one sex (all male or female--occurs in about one-third of all infected dogs), no microfilaria, adult heartworms present.
3. Newly acquired heartworm infection (during past 6 months), adult heartworms present.
4. Antibody-microfilaria interaction prevents detection of microfilaria (this occurs in about one-third of all dogs with occult infection), adult heartworms present.
5. Microfilaria absent because of treatment, adult heartworms present.
6. Microfilaria number low because of seasonal change, adult heartworms present.
7. Once-a-month preventative caused temporary adult sterility, no microfilaria but adult heartworms present.

Microfilaria Neg/Antigen Neg

1. True negative dog, no microfilaria or adult heartworms.
2. Low number of microfilaria and adults.
3. Adults of one sex (all male or female), with no microfilaria; adult heartworms present but low in number.
4. Migrating heartworm larvae take 100 days to reach the heart, so both tests may be negative for first 180 days. Such a dog will eventually harbor adult heartworms and microfilaria.
5. Immune response eliminated microfilaria and antigen, adult heartworms present.

--Source: Henry C.J., Dillon R., "Heartworm Disease in Dogs," Journal American Veterinary Medical Association, Vol 204, No. 8, April 15, 1994, pp 1148-1151, as reported in Veterinary Newsletter, No. 305, December 1994, University of Georgia, Athens, GA.

ELECTRONIC IDENTIFICATION UPDATE

Ten years ago electronic identification (EID) of animals was just getting off the ground. For a while progress was slow, and finding the right direction in which to proceed was difficult. There were also hurdles erected by the Federal Communications Commission (FCC) and the Food and Drug Administration (FDA). The FDA requires the manufacturers of EID equipment to assure them that the transponders implanted in the animal will be harmless if they are in a part of the animal that will be rendered.

An alternative to this is that the EID manufacturer shows that transponders can absolutely be removed from the carcass at slaughter time. These FDA conditions have caused the manufacturers of EID devices to temporarily use eartags containing transponders in food producing animals. This will continue until better assurances can be made about the removal of transponders from carcass parts at slaughter time.

The greatest amount of EID work has been done in horses. A Colorado State University study showed that EID transponders: (1) Do not migrate in the horses' tissues, (2) Are durable, with a failure rate of less than 0.5%, (3) Do not affect the reproductive efficiency of stallions or mares, and (4) If implanted properly, are virtually tamper proof. This form of identification is starting to catch on for horses in the United States. In Europe, however, over 80,000 have been electronically identified.

For cattle and swine, the EID manufacturers are targeting an external means of attachment for the transponder. These are designed for use in the barn or the corral. A hand-held combination computer/scanner has been developed that allows the livestock owner to automatically record the identity of the animal, then record data about the animal by punching into the hand-held terminal.

Recent field trials have led to the commercial application of EID in laboratory animals. Trials have also been completed that demonstrate the feasibility of using EID in dogs, cats, psittacine birds, and racing pigeons where it might become quite useful in reducing the numbers of smuggled birds and stolen pets.

There are still some technical points to work out, regulatory hurdles to cross and public acceptance to gain, but nonetheless, great strides have been made in the EID area during the past ten years. As computers become more widely used in animal production units, it will become necessary to incorporate EID systems to keep pace with modern animal production methods. **--USAH Ann. Newsletter, February 1994, as reported in Florida Veterinary Scene, July/August 1994, Univ. of Florida, Gainesville, FL. Virginia Veterinary Notes, November/December 1994, as reported in The University of Georgia Cooperative Extension Service Veterinary Newsletter, No. 305, December 1994.**

TOXOCARA SEROPREVALENCE IN 5-YEAR-OLD ELEMENTARY SCHOOLCHILDREN: RELATION WITH ALLERGIC ASTHMA

The relation between *Toxocara* seroprevalence and allergic asthma was investigated in Dutch schoolchildren aged 4 to 6 years. Data on *Toxocara* antibodies, allergen-specific immunoglobulin E, allergic manifestations, and risk factors (pets and playgrounds) were obtained from 235 children. Seroprevalences varied widely among schools. No differences between socioeconomic categories or between the sexes were found. Occurrences of asthma/recurrent bronchitis were significantly associated with seroprevalence. Furthermore, a marginally significant relation with eczema was found. Immunoglobulin E specific for inhaled allergens occurred significantly more often in the *Toxocara*-seropositive group. The risk factors investigated were not related to seroprevalence. It is suggested that *Toxocara*, among other environmental factors, may stimulate polyclonally immunoglobulin E-production, including allergen-specific immunoglobulin E, and thus may contribute to the manifestation of allergic asthma and possible eczema in children predisposed to allergy. **--Abstracted from Buijus, J., et al., Am. J. Epidemiol. 140 (1994) p 839-837, as reported in Vet Med, Vol. 1, Issue I, Jan. 1995, Iowa State University, Ames, IA.**

UPDATE ON ELECTRO-IMMOBILIZATION (EI) AND ELECTRO-ANESTHESIA (EA) IN VETERINARY MEDICINE

In the early 1980s a battery powered apparatus was introduced by an Australian company (Feenix Stockstill) with claims for both electro-analgesia and electro-immobilization; this device was rapidly mimicked by other manufacturers. Independent research in the mid-80s in Canada, U.S., Netherlands, and Australia confirmed the electro-immobilization effects, but were unanimous in their conclusions that whole-body ANALGESIA DID NOT OCCUR and all recommended against the use of these apparati in animal handling from an animal welfare concern. The electro-stimulus appeared to be as noxious as procedures in which the immobilizer(s) would be used for restraint. Therefore traditional restraint (with chemical analgesia/anesthesia techniques whenever possible) remained the method of choice. NOTE: (EA. - infers an alteration of perception to stimuli, e.g. pain).

Currently, a South African company (Pretoria Control Instrumentation) is offering an electro-immobilizer with the same circuitry that is used in relieving back pain. The company makes several claims that are currently unsubstantiated by research (independent or other) as to the analgesia as well as immobilizing effects of this device. A demonstration at C.S.U. on five Angus cows on one researcher, again confirmed the immobilization effects, but failed to show any analgesia. It was the researcher's opinion that the new unit with its present directions for whole body application may be more aversive than previous units. NOTE: Future research may prove local/regional analgesia can be achieved with these portable units.

The AABP Animal Welfare Committee is reviewing this topic and for the present cannot recommend the use of any electroimmobilizer. **--Source: Clinical Veterinary Medical Newsletter, Extension Veterinary Medicine, KSU Veterinary Medical Teaching Hospital, November 1994. Michael Anderson, DVM, Animal Welfare Committee, AABP Newsletter, August 1994, as reported in Veterinary Medicine Newsletter, Nov 1994, College of Veterinary Medicine, Kansas State University, Manhattan, KS.**

CONTACTING THE ANIMAL POISON CONTROL CENTER

The National Animal Poison Control Center (NAPCC), a non-profit service of the University of Illinois, is the first animal-oriented poison center in the U.S. NAPCC is staffed with veterinary health professionals who are familiar with how different species respond to poisons and treatment protocols. Veterinarians and animal owners may call either 1-800-548-2423 or 1-900-680-0000 at any time. The cost for the 800 number is $30.00 per case, and payment by credit card is required. The charge for the 900 number is $20.00 for the fist 5 minutes and $2.95 per minute thereafter.

NAPCC also offers manufacturers of animal and agricultural products an extensive animal product safety program. The Animal Product Safety Service provides a toll-free animal product safety number which can be printed on product labels and literature. The service assists owners and veterinarians with questions or suspected poisonings. The program also manages case records, compiles quarterly case reports, and consults with the manufacturer's professional staff to improve product safety. Additional services are available to tailor an animal product safety program to meet each manufacturer's needs.

For additional information on the NAPCC, please contact Dr. Louise M. Cote, NAPCC, University of Illinois, College of Veterinary Medicine, 2001 South Lincoln Avenue, Urbana, Illinois 61801. **--FDA Veterinarian, Sept./Oct. 1994, as reported in Veterinary Medicine Newsletter, Nov 1994, College of Veterinary Medicine, Kansas State University, Manhattan, KS.**

THOUGHT FOR THE MONTH

To attain excellence, you must care more than others think is wise, risk more than others think is safe, dream more than others think is practical. I invite you to care more, accept the risk, and share the dream. **--Frank Rhodes, President, Cornell University.**

PRACTICE TIPS

- A fish net works well in catching fractious cats.
- Natural light (as opposed to fluorescent lighting) makes it easier to detect icteric membranes in patients.
- Each practice employee should have his/her own private space to keep personal belongings (locker is best).
- Have a sink in each exam room and make it a ritual to wash your hands before examining the patient.
- Office visits of more than 32 minutes and less than 18 minutes have a decrease in perceived value to the client.
- Use WD-40 to remove adhesive tape residue from an animal's hair and skin.
- Clinic staff should be trained in CPR. Keep an Ambu bag and smelling salts readily available.
- Radiograph markers should include the initials of the person taking the radiograph so poor technique can be corrected.

--The North American Veterinary Conference, January 1995 (as reported by KC Roberts).

CONTINUING EDUCATION OPPORTUNITIES
Spring 1995

Date	Subject	Location	Contact Hours
+March 23	Small Animal Medicine Update	Charlottesville	4
+*March 24-25	Diagnostic Cytology	Blacksburg	10
*March 31-April 1	Ultrasonography	Blacksburg	10
+April 2	Small Animal Medicine Update	Charleston, WV	4
*April 21-22	Gastrointestinal Endoscopy (basic)	Blacksburg	10
*April 28-29	Clinical Fish Medicine	Blacksburg	10
*May 5-6	Thoracic Radiology	Blacksburg	10

*Limited enrollment short course featuring hands-on instruction.
+Open to veterinary technicians.

Note: Program brochures are mailed out six-eight weeks prior to the course date. No registrations accepted until brochures go out.

For further information, please contact:

Dr. J.M. Bowen
VMRCVM - Virginia Tech
Blacksburg, VA 24061
(703) 231-7388

ANNUAL CONFERENCE FOR BOVINE PRACTITIONERS

A conference for bovine practitioners, sponsored by the VMRCVM, Maryland campus, will be held at the Holiday Inn, Francis Scott Key Mall, Frederick, MD, on March 30-31, 1995. The conference begins at 1:00 PM on Thursday, March 30. Registration is $120 for both days and $70 for one day, including meals.

For registration or more information, contact Dr. Douglas Carmel, VMRCVM, College Park, MD 20742; telephone (301) 935-6083 ext 118; FAX (301) 935-6079.

Virginia-Maryland Regional College of Veterinary Medicine Extension Staff:

Dr. J.M. Bowen	-	Extension Specialist - Equine
Dr. C.T. Larsen	-	Extension Specialist - Avians
Dr. K.C. Roberts	-	Extension Specialist - Companion Animals
Dr. W. Dee Whittier	-	Extension Specialist - Cattle

K.C. Roberts, Editor
Maura M. Wood, Production Manager of VIRGINIA VETERINARY NOTES

VIRGINIA POLYTECHNIC INSTITUTE
AND STATE UNIVERSITY
VIRGINIA COOPERATIVE EXTENSION
BLACKSBURG, VIRGINIA 24061-0512

Nonprofit Org.
U. S. Postage
PAID
Blacksburg, VA 240
Permit #28