Spring 1999 Vol. 2, No. 2

# Animal Health News

News for Veterinarians from the North Dakota Board of Animal Health

# Bovine TB found in N.D. herd

## Ongoing testing shows no further spread of disease

Efforts are continuing to determine if the bovine tuberculosis detected in March in a Morton County dairy herd has spread to any other animals in North Dakota.

As of this writing, no indication of the disease has been found outside of the Tom Fried premises near Mandan.

The following is a brief chronology of the incident:

Jan. 28 – A dairy animal slaughtered at a Minnesota facility was found to have lung lesions indicating tuberculosis. Federal veterinarians ordered culture tests and began tracing back records of the animal.

Feb. 17 – Federal officials notified Dr. Larry Schuler, North Dakota state veterinarian, that an animal with TB lesions had been traced to North Dakota. The traceback showed that the infected animal came from the Thomas Fried farm near Mandan.

March 1 – Dr. Schuler ordered a quarantine of the Fried farm and informed Roger Scheibe, NDDA dairy services director. Initial tests indicated at least half the Fried herd had been exposed to TB.

March 2 — Scheibe suspended delivery of all dairy products from the Fried farm, and informed Dakota Country Cheese, Mandan, the sole purchaser of milk from the Fried farm. Dakota Country Cheese voluntarily suspended shipment of products that might contain milk from the Fried operation.

March 1-7 – Federal and state officials conducted extensive tracing and research to determine that all the milk products from the Fried farm that reached the marketplace had been properly pasteurized. Investigators later concluded that all products had been properly pasteurized before being sold for public consumption.

March 5 – Fried personally delivered four animals from his herd to the Veterinary Diagnostic Laboratory at North Dakota State University, where they were autopsied by Schuler, Dr. Susan Keller, deputy state veterinarian; Dr. Larry White, N.D. area-veterinarian-in-charge, and Dr. Barbara Porter, veterinary medical officer. Histopathology tests found three of the animals had lesions consistent with TB.

March 5 – At a press conference in Bismarck, the state's chief medical officer, Dr. Stephen McDonough, said there is no apparent health risk to the general public. Members of the Fried family and all employees of Dakota County Cheese are tested for TB. As of this writing, there is no indication of any transmission to humans.

March 10 – The North Dakota Board of Animal Health quarantines all livestock within an approximate five-mile radius of the Fried farm. Caudal fold testing is initiated on the approximately 5,000 cattle in 50 herds in the quarantine area.

March 15 – The Board of Animal Health ordered the destruction of the Fried dairy herd.

Presently, state and federal veterinarians, assisted by North Dakota Department of Agriculture (NDDA) personnel, are administering caudal fold tests to all cattle within an approximately five-mile radius from the Fried farm. Cattle from two herds in Burleigh and Grant counties that contained animals from the Fried herd will be tested.

**Continued on page 5**

*In this issue*

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Ted Quanrud, Editor

# Veterinary news briefs

## Hearing set on swine import rules

The North Dakota Board of Animal Health (BOAH) has scheduled a hearing on emergency rules that the board adopted in March in response to the pseudorabies outbreak in Minnesota (see story on Page 10).

The hearing is scheduled for 9 a.m., Thursday, May 13, in the Peace Garden Room of the State Capitol in Bismarck.

The proposed rules address import requirements for all swine and boar semen. The rules are amendments to N.D. Administrative Code 48-02-01-06 and 48-02-01-11. They were adopted by BOAH on an emergency basis at the board's March 10 meeting.

The proposed rules may be viewed weekdays during business hours at the state veterinarian's office on the sixth floor of the Capitol. Copies of the proposed rules and a regulatory analysis may be obtained by writing or calling Dr. Larry Schuler, State Veterinarian, 600 E. Boulevard Ave., Dept. 602, Bismarck, ND 58505-0020; telephone (701) 328-2654; fax: (701) 328-4567; lchuler@state.nd.us

Any written or oral data, views or arguments regarding the proposed rules, received by June 14, will be fully considered.

Persons planning on attending the hearing or who require special facilities or assistance because of disability, should contact Dr. Schuler, at (701) 328-2654.

## Examiners board to meet

The North Dakota Board of Veterinar y Medical Examiners will meet at 9 a.m., Monday, June 7, at the State Capitol in Bismarck.

The agenda includes examination of candidates for licensure and other business.

For more information, please call the board office at (701) 328-9540.

## Veterinary technican exam slated

The North Dakota Board of Veterinary Medical Examiners will administer the Veterinary Technician National Examination (VTNE) to candidates on Friday, June 11, in Fargo.

The examination is required for licensure as a vertinary technician in North Dakota.

For more information, please call the board office at (701) 328-9540.

## CWD surveys turn up negative in Kansas, Nebraska deer

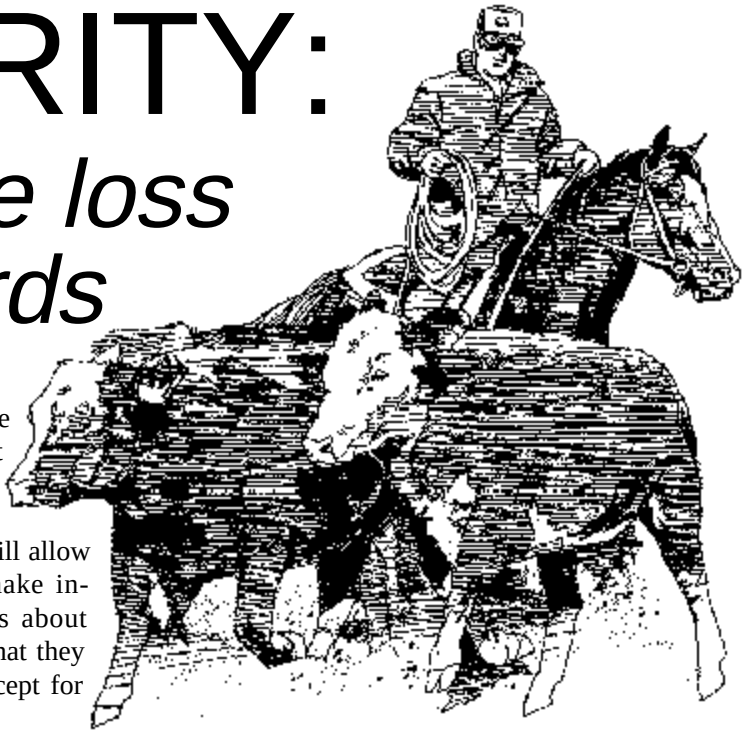
TOPEKA, KS -- No sign of chronic wasting disease (CWD) has been found in more than 300 brain samples collected from hunter-killed deer in western Kansas this past hunting season.

The collection and testing was a cooperative effort of Kansas Wildlife and Parks and state and federal regulatory agencies. Final results are pending, but so far no indications of CWD have been found in a similar project in neighboring Nebraska.

CWD is a transmissible spongiform encephalopathy of deer and elk, similar to scrapie and bovine spongiform encephalopathy, commonly called "mad cow disease." It occurs in the wild in northeast Colorado and southeast Wyoming and has been diagnosed in captive herds in other states.

# BIOSECURITY:

## *Avoiding disease loss in beef cattle herds*



By Dr. John U. Thomson
Professor of Veterinary Diagnostic and Production Animal Medicine
Iowa State University

Many diseases that reduce production and profits in the beef industry can be prevented, eliminated or controlled through a combination of diagnostic testing, environmental management, vaccination and strategic use of antibiotics. The term "biosecurity" can be defined as a process to protect the beef herd from a disease. The term "biocontainment" is used when we refer to keeping a disease from spreading to susceptible cattle.

Beef producers have traditionally relied on vaccines, antibiotics and regulatory programs for brucellosis and tuberculosis as elements of their biosecurity and/or biocontainment programs. This is understandable, for much of the information presented to them is from companies marketing vaccines and antibiotics. Global market opportunities and pre-harvest food safety concerns have increased the importance of biosecurity at the farm level.

Individual beef producers should realize that cattle can carry disease causing viruses, bacteria and parasites such as Bovine Virus Diarrhea (BVD) virus, Infectious Bovine Rhinotracheitis (IBR) virus, Bovine Leukosis Virus (BLV), Rotavirus, Corona virus, Bluetongue (BT) virus, *Leplospiria* sp. (Lepto), *Moraxella* bovis (pink-eye), *Mycobacterium paratuberculosis* (Johnes), *Salmonella sp., Mycoplasma sp., Anaplasma marginale* (anaplasmosis), *Neospora caninum, Cryptosporidium* sp. and many others while appearing visibly normal. Beef producers need to become knowledgeable about the risks of these diseases, how they are spread and what tools are available to prevent or control them. This will allow individuals to make informed decisions about the health risks that they are willing to accept for their beef herd.

All beef producers should consider isolating breeding stock additions for at least 30 days prior to commingling with their herd. This will allow time to observe the animals for health problems, implement a vaccination program and obtain needed diagnostic test results. A producer should consider the timing of herd additions. For example, commingling cow/calf pairs during the calving season can significantly increase the possibility of precipitating a calf diarrhea problem.

Each disease causing agent has unique characteristics that should be considered if a producer wants to avoid and/or minimize the risk of economic losses. For example, Leptospirosis (Lepto) has been recognized for many years and most producers feel confident they can control the disease if they vaccinate their herd. However, leptospiral vaccines have some definite limitations. The disease is difficult to diagnose and animals may become chronically infected.

There are multiple Leptospira serovars or types. Dr. Carol Bolin, Research Leader, Zoonotic Diseases, USDA, Agricultural Research Service, National Animal Disease Center stated, "It is difficult to predict the efficacy of leptospiral vaccination in cattle. In general, commercial leptospiral vaccines are quite effective for prevention of disease caused by serovars grippotyphosa, canicola, pomona,and icterohemorrhagiae. The vaccines are less efficacious for prevention of serovar hardjo infection. Clearly, in situations in which there is heavy exposure of cattle or serovar hardjo infection is endemic, leptospiral vaccines given once per year are unlikely to be effective."

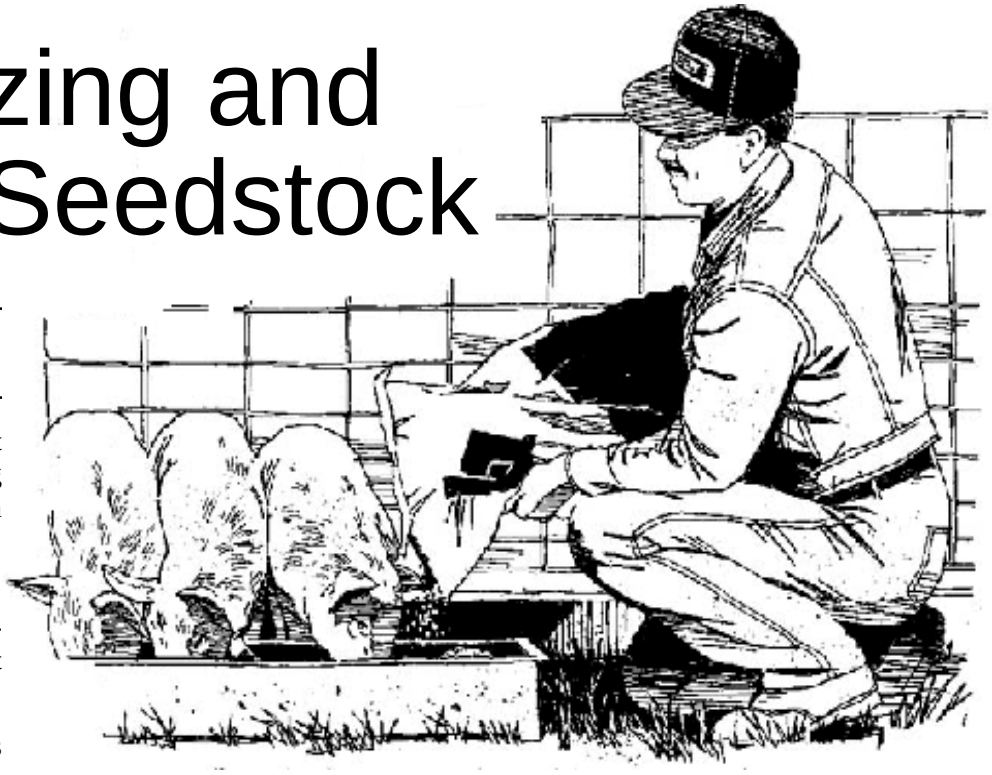
Animals should receive two vaccinations of L. hardjo vaccine prior to being exposed to carrier animals. Vaccination will not help animals already infected. This requires most producers to start vaccinating replacement animals at approximately 4 months of age.

A single IM injection of 20 mg/kg of LA 200 has been shown to clear the infection from the kidneys and stop urinary shedding of serovar hardjo and improve infertility in persistently infected cows. This treatment regimen can be used during the 30-day isolation period to decrease the risk of adding *Leptospira* sp. to a herd. Several firms are working to improve bovine leptospiral vaccines.

***Next issue: Biosecurity in the dairy industry***

Reprinted with permission from the Winter 1999, issue of **CATTLE HEALTH REPORT,** published by the Livestock Conservation Institute

# Acclimatizing and Isolating Seedstock



By Thomas Fangman, DVM
and Chanda Farnan
University of Missouri

**Producer question:** I've heard a lot about isolating and acclimatizing seedstock replacements, but what does a program need to include?

**Fangman's and Farnan's response:** Isolating and acclimatizating replacement animals is an important component of a successful biosecurity program.

To many producers biosecurity means keeping disease out of their herds. However, that's virtually impossible since there's an inherent pathogen population in every herd. For example, at any given time, levels of Strep. suis, Bordatella, Pasteurella, or other diseases may be detected. This is known as the endemic pathogen load.

The isolation/acclimatization period should last at least 60 days. That means keeping them separate from your main herd. This lets replacement animals express any clinical signs of pathogens stimulated by the stress of a new home.

During isolation we actually want the replacement animals to get sick and show clinical signs, so they can be treated accordingly before introducing them into the herd. During this period, the animals shed pathogens they bring with them. After you have gone through a 60-day isolation and acclimatization period, have treated existing pathogens and blood tests are negative for pathogens, you can introduce the replacement animals into your herd.

Even though your herd has endemic pathogens, the animals may not exhibit clinical signs. That's a compliment to herd management, sufficient pig space allocation and the fact that all systems are flowing properly. If the animals are exposed to stresses, such as overcrowding, drafts or poor nutrition, clinical signs associated with the diseases will surface.

You also will see clinical signs if replacement animals are exposed to pathogens for the first time as they enter your herd. Whether the replacements are gilts or boars, once they are exposed to a new pathogen, they become a reservoir and incubation opportunity for the pathogen. This gives pathogen levels an opportunity to increase within the herd.

The types of pathogens present are not the same in every herd. The worst possible thing to do, when bringing in replacement animals, is to dump them in with the existing population.

For example, your supply herd may have one serotype of Strep. suis, while your main herd has levels of another serotype. Each serotype can now serve as nonendemic exposure to the other. If you mix animals from the two herds, both serotype levels will increase. That's because the animals with one serotype will serve as incubators for the other.

Another function of isolation and acclimatization practices is to expose replacement animals to the endemic pathogen load of the main herd. The acclimatization period occurs in the last 40 days of isolation and involves strategies for exposing replacements to the herd pathogen load.

One strategy is biofeedback. This involves exposing the manure of animals (sows or nursery pigs) from the main herd to the isolated replacement animals. Biofeedback should begin 10 days after the replacement animals arrive on your farm and continue for 40 days.

A second strategy is to introduce cull sows from your herd into the isolation facility. New boars can be test mated to these sows, and new gilts will be exposed to endemic pathogens through direct contact. Since the goal is to spread existing pathogens to replacement animals, identify cull sows that might be shedding endemic viruses, such as porcine reproductive and respiratory syndrome.

Serological testing can help with this. If, for example, the serum of the cull sow demonstrates an ELISA-test value greater than 1 and she is PCR positive, then the sow is likely viremic and shedding virus. She would be a good candidate to expose the replacement animals.

Another way to expose replacement animals is to bring in two or three nursery pigs that are failing to thrive. Place the

**Continued on page 6**

# U.S. proposes changes in veterinary accreditation

The National Veterinary Accreditation Program was started in 1921, as a voluntary effort to insure that all veterinarians representing the federal government were qualified. The program is not mandated by state or federal governments.

The United States is the only country that utilizes private veterinarians to perform regulatory duties. To protect foreign markets, the U.S. must assure its trading partners that accredited veterinarians are qualified for those activities involved in international movement of livestock and livestock products.

The driving forces for change include implementation of GATT and NAFTA, increasing international markets, developing "disease free" export regions, increased scrutiny of disease status by international trading partners, demand for industry driven quality assurance programs, HACCP-based inspection and the complexity of export evaluation. Our ability to compete is being judged by our animal health infrastructure, diagnostic capabilities, border securities, surveillance and testing credibility. Accredited veterinarians are crucial to the maintenance of domestic animal health infrastructure and are ideal resources for supplementing national eradication and emergency preparedness activities.

The proposed changes are in the developmental stage and include required continuing education, fees to recover costs and a quality assurance program. Two categories will be established. Those enrolled in Category I will be certified for companion animal health certificates, activities prescribed by the state, and foreign animal disease surveillance. There are no continuing education requirements, but a response to national newsletter inquiries is necessary. Those choosing Category II will be certified to conduct Veterinary Services and state activities; health certificates (import/export work), foreign animal disease surveillance, herd health certification, emergency animal disease management functions, and other activities as specified. Those choosing this category may be required to have 10 units of continuing education sponsored by USDA/APHIS every two years. Sources may include seminars, courses, CD ROM, satellite down links, national newsletter, web sites and others.

Fees for maintaining accreditation have not been determined but would be less for those in Category I and would be as inexpensive as possible.

The implementation target date is 2001.

For more information or to provide comments contact:

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Reprinted with permission from the February 1, 1999, issue of **KANSAS ANIMAL HEALTH NEWS**.


"Taking Care of Each Other" is the theme for National Pet Week, May 2-8, 1999. Sponsored by the American Veterinary Medical Association and Auxiliary, the American Animal Health Association and the North American Veterinary Technician Association, the event celebrates the bond between people and animals and the ways in which they can take better care of each other.

Veterinarians and veterinary groups are encouraged to use this week for open houses, educational events and other activities. For more information, including sample press releases, contact the AVMA public information division at (800) 248-2862; www.avma.org

# Ongoing testing shows no further spread of disease

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The testing is essential to North Dakota's effort to preserve the tuberculosis-free status that enables the state's livestock producers and sellers to transport animals out of state without a TB test. Loss of the status could cost the state's producers millions of dollars for additional testing and loss of markets.

Dr. Schuler credited a number of agencies, including the North Dakota Department of Agriculture, the North Dakota State Health Department, the U.S. Department of Agriculture and North Dakota State University Veterinary Services for their efforts and cooperation in responding to this incident.

# Pseudorabies near epidemic in Minnesota

ST. PAUL, Minn. -- The Minnesota Board of Animal Health and the Minnesota Department of Agriculture have jointly issued a strong warning to farmers about a rising wave of pseudorabies infections among southern Minnesota hog herds.

"The rapid spread of this disease has created a new crisis for Minnesota hog producers," said Dr. Tom Hagerty, the state veterinarian. "With this type of epidemic, the only way to protect herds is to vaccinate pigs."

Pseudorabies poses no risk to humans, but the extremely contagious swine disease can be fatal to cattle, horses, dogs, cats, sheep and goats. The virus can cause reproductive problems, including spontaneous abortions, stillbirths, and even death in breeding and finishing hogs. It also limits a farmer's ability to get a competitive price for his or her animals. Once infected, swine remain carriers of the virus for life.

This sudden outbreak comes just as the state had been on its way to eliminating the disease. Until last month, the incidence of pseudorabies in Minnesota has been on a steady decline for years. Since a national program to eradicate the disease was implemented a decade ago, the number of Minnesota herds placed under pseudorabies quarantine had dropped from a high of 903 in 1992 to just 144 in 1998.

However, 90 new herds have become infected since Jan. 1. There are now 234 farms under quarantine in the state, with more likely to be added soon. Hagerty said several factors combined to spark this sudden flare-up.

"No one could have anticipated that we would see this kind of explosion, but the roots of the problem are fairly clear," Dr. Hagerty said. "First, hog numbers in the state have increased in the last few years, and as populations go up, the opportunities for infection increase. Second, with the recent low hog prices we've seen, some farmers have chosen not to pay for the pseudorabies vaccinations available from veterinarians. Third, it has been a mild winter, and conditions have been ripe for spreading the virus on the wind."

The state's pseudorabies hot spots are Blue Earth, Brown, Jackson, Lyon, Martin, Nobles, Redwood and Watonwan counties in southwestern Minnesota. Hagerty has advised all producers who have not already vaccinated their herds to do so as soon as possible.

# Colorado lists new rules on sheep imports

Colorado has adopted new rules regarding scrapie which change requirements for importation of breeding sheep and goats into the state, at public livestock markets and sales, and the manner in which scrapies infected, source and trace flocks will be handled.

Breeding sheep and goats being imported into Colorado must now:

1. Be identified by tag, tattoo or electronic ID (paint brands are unacceptable).
2. Be accompanied by a statement placed on the health certificate, written and signed by the owner from the state of origin, stating that the flock of origin is not known to have scrapie nor has the flock of origin been designated as a "source" or "infected" flock in the last five years.
3. Be accompanied by a Colorado import permit.

For more information, contact the Colorado Department of Agriculture, Animal industry Division, 700 Kipling St., Suite 4000, Lakewood, CO 80215-5894; phone (303) 239-4161; fax: (303) 239-4164.

# Acclimatizing and isolating seedstock

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nursery pigs into the pens with the new ammals for direct contact.

Today, mounting evidence suggests that infectious disease outbreaks in hogs are usually multi-causal, involving a combination of bacterial, viral and parasitic agents influenced by stress, nutrition, environment and management. So, you must be aware of the pathogens present in your herd, as well as those in the supply herd. And you need to isolate and acclimatize replacement animals whether they are farm-raised or purchased.

While distance between buildings seems to play a role in spreading pathogens (a 100-yard distance between buildings is suggested), it is not the determining factor of a successful biosecurity program. Management is the key to success. This includes timing chores and people movement on the farm.

Assign one person to care for hogs in the isolation/acclimatization unit. Also, those chores should be done at the end of the work day.

By understanding that there are ever-present, endemic pathogens in swine herds and by following strict management, isolation and acclimatization protocols, you can control pathogens.

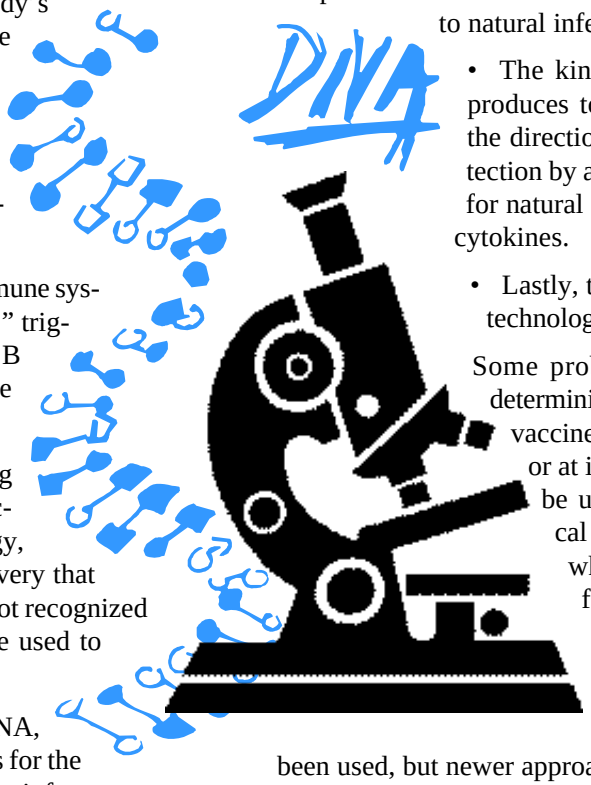
Reprinted from the February issue of **PORK'99.**

# DNA vaccines may revolutionize industry

## *New technology promises versatility, lower cost and improved response*

By Dr. Tom Chambers
Gluck Equine Research Center
University of Kentucky

Vaccines for protection of humans or animals from disease have conventionally been of a few kind: killed organism vaccines like equine influenza vaccine; attenuated live organism vaccines like smallpox vaccine; or subunit vaccineslike tetanus toxoid. All are designed to expose the body's immune system to novel proteins that are characteristic of those pathogens: proteins that are either parts of the killed organism, are manufactured inside the body by the attenuated live organism, or are industrially manufactured in the case of subunit vaccines.




Following administration the animal's immune system recognizes these proteins as "foreign," triggering development of immune T and B cells, which clear the proteins from the body.

Today a new vaccine technology is being developed that may revolutionize the vaccine industry. The basis of this technology, DNA vaccination, is the accidental discovery that DNA itself, which is not a protein and is not recognized by the immune system as foreign, can be used to vaccinate an animal.

A fundamental tenet of biology is that DNA, the molecule of genetic information, codes for the proteins that are the realization of genetic information. There are DNA "codes" or sequences for all the proteins that constitute infectious agents like bacteria or viruses. If a DNA molecule of the correct sequence is taken up by a cell, the cell makes the protein encoded by the strange DNA, almost as though it were the cell's own DNA. The immune system won't be fooled and will respond to the strange protein by making the required T and B cells. The animal will become immune.

DNA vaccines offer several potential advantages over conventional vaccines:

- They ought to be safe, because DNA is not infectious and can be highly purified. Concerns that DNA vaccines might induce autoimmune reactions or anti-DNA antibodies have so far proven unfounded.
- DNA is stable at room and even tropical temperatures, so vaccine shelf life is enhanced and refrigeration unnecessary. By contrast the refrigeration required by conventional vaccines, decreases utility and adds tremendously to cost.
- DNA is easy to work with, so new modifications can be quickly developed. This is particularly advantageous for vaccines that need periodic updating, like those for influenza. It also promises to cut down the time needed to develop vaccines against newly emerging diseases.
- Because DNA vaccination produces foreign proteins in the cells of the recipient similar to an infection, the immune response to DNA vaccines is a better imitation of the response to natural infection than that of killed vaccines.
- The kind of immune response the body produces to DNA vaccine can be biased in the direction most favorable for disease protection by adding to the vaccine genes coding for natural immune modulators, called cytokines.
- Lastly, the ease and versatility of genetic technology promises to cut production costs.

Some problems still remain. Foremost is determining the best way to administer DNA vaccines. When delivered inappropriately or at insufficient doses, their effects can be undetectable by standard serological tests, leaving researchers in doubt whether the vaccine is working. Different chemical "facilitators" such as bupivacaine are being studied for their ability to promote the uptake of the DNA into cells. Intramuscular injections have been used, but newer approaches deliver DNA to mucosal tissues such as the inside of the mouth.

A device called the "gene gun" has been used to fire microscopic pellets of gold, coated with DNA, into the skin as a kind of diffuse cutaneous inoculation. Whether this becomes practical remains to be seen. In rodents a DNA vaccine given orally in capsules has protected against challenge with rotavirus. For vaccination against respiratory diseases, researchers hope that DNA vaccines might be effective when delivered as a nasal spray, so that the immune response will be centered on the respiratory tract.

Other viral diseases including rabies and various equine encephalitic viruses are strong candidates for DNA vaccination.

Reprinted in part from the January 1999, issue of **EQUINE DISEASE QUARTERLY**, published by the Gluck Equine Research Center at The University of Kentucky

# Baytril 100 off limits for dairy, veal animals

The fluoroquinolone product, enrofloxacin, manufactured by Bayer Corp. as Baytril 100 Injectable Solution™ , is approved for use by prescription only in cattle and only for the treatment of bovine respiratory disease (BRD) associated with *Pasteurella haemolytica, Pasteurella multocida, and Haemophilus somnus*. Any extralabel use of fluoroquinolones, including Baytril 100, in food animals is prohibited under Title 21, Part 530.41 of The Code of Federal Regulations.

Baytril 100 is not approved for use in calves to be processed for veal or all classes of cattle involved in the dairy farm operation including calves reared as dairy cow replacements, heifers, lactating and non-lactating (dry) dairy cows, and bulls maintained for breeding purposes. Baytril 100 may be used to treat BRD only in dairy breed animals (e.g., dairy breed feedlot steers, bulls, heifers) maintained for beef production.

The restriction on use of Baytril 100 in cattle intended for dairy production and veal calves is based on human food safety concerns. These concerns include the increased prevalence of certain pathogens with zoonotic potential (such as *Salmonella*) on dairy farms, the higher level of human-animal contact on dairies, and concerns about meat and milk safety. Because of these human food safety concerns, Baytril 100 should not be used to treat cattle intended for dairy production or stored in dairy farm drug cabinets. FDA regional milk specialists will be looking for the presence of the drug during dairy farm inspections conducted under the Grade A Pasteurized Milk Ordinance. Causing the use or using this drug in cattle intended for dairy production or calves to be processed for veal may result in regulatory action by FDA and/or state regulatory authorities.

> Any extralabel use of fluoroquinolones, including Baytril 100, in food animals is prohibited

Baytril 100 should be used only in appropriate classes of cattle when BRD is diagnosed. Veterinarians should be particularly prudent in selection of therapy for BRD when concurrent diseases are present. Concurrent disease, such as enteric disease, is of concern because it may be associated with organisms that may be transferred to humans.

Further information about the approval of Baytril 100 is contained in the Sept. 14, 1998, Federal Register document (pp. 49002-49003). Any questions concerning the restrictions on the use of Baytril 100 may be directed to Dr. Michael Talley on (215) 597-4390 ext. 4541#.

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