

VIRGINIA COOPERATIVE EXTENSION SERVICE

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G. A. MacInnis
Extension Specialist

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MEETINGS

Pet Dentistry for Veterinarians - Charles A. Williams, D.V.M.
Northern Virginia Community College - Loudoun Campus
June 10-11, 1981 - Sterling, Virginia

Surgery of the Eye and Eyelids (Other than cataracts) -
Kathleen P. Barrie, D.V.M.
Central Virginia VMA - A. H. Robins Bldg.
June 11, 1981 - Richmond, Virginia

Rabbit Short Course - Speakers on health, management and pro-
duction - Adult and Youth sessions
John Tyler Community College
June 20-21, 1981 - Chester, Virginia

For more information contact:

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GENETIC ENGINEERING AND FOOT AND MOUTH DISEASE

Foot and Mouth Disease, among all diseases affecting domestic ani-
mals, would be the first to benefit from the most recent advances in
genetic engineering.

Several laboratories in Europe and the National Animal Disease
Laboratory in Plum Island, in collaboration with Genetech, one of the
companies interested in the production and commercialization of the
product, have been able to obtain bacteria capable of producing viral
antigens.

The technique consists, very grossly, of obtaining the genetic
information responsible for the codification of the different viral
proteins. Once the viral genome has been fractionated, it is neces-
sary to attach the gene in which we are interested to a plasmid or a
bacteriophage, which play the role of vectors to carry the information
into a bacterium (E. coli is the most used). In this way bacteria are
obtained which are "factories" of the desired product. The same techni-
ques have been used for the production of other proteins like inter-
feron and insulin.

In the case of Foot and Mouth disease, all the effort has been
directed toward the production of the viral protein VPI, which is by
itself able to stimulate the production of viral neutralizing anti-
bodies. The vaccination with Foot and Mouth disease VPI has already
been assayed in pigs in Germany.

The two main advantages for this vaccine are: first of all, the
safety of the product since the infectious agent is not included, and

secondly, the potentiality for mass production given the short replication cycle of bacteria.

From lingual epithelia for Foot and Mouth disease vaccine production in the '50s to the technique of cell-suspensions in the '70s, we have arrived at the age of genetic engineering and the objective is still the same: the control and eradication of Foot and Mouth disease.

Jorge E. Ossa, Instructor
College of Veterinary Medicine
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PLANT POISONING

A new publication, Plant Poisoning in Small Companion Animals by Murray E. Fowler, DVM, School of Veterinary Medicine, University of California at Davis, is now available. Copies may be obtained by writing:

Ralston Purina Company
Checkerboard Square
St. Louis, Missouri 63188

COMPUTER-ASSISTED LITERATURE SEARCH

Demonstrations of this valuable information retrieval system were conducted at the Virginia Veterinary Medical Association meeting in Williamsburg, February 20-21, 1981. A booth set up in the commercial exhibit area was manned by Katherine MacNeil, librarian for veterinary medicine at Newman Library, Virginia Tech, Blacksburg. Kathy ran a number of searches for interested veterinarians on subjects ranging from canine parvovirus to prothrombin time, all free of charge, as a means of demonstrating one of the services now available for veterinarians in the region served by the College.

The cost of a literature search can vary from \$1.00 to \$30.00 but the average cost is under \$10.00. This complete review of the literature can be accomplished in minutes and a printout of the references is then furnished.

Persons interested in having a search conducted or in obtaining more information on searches may contact:

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NO ROOM FOR ERROR

As reported in the January issue of this newsletter, a new highly sensitive test for antibiotics in milk will be used in Virginia in the near future. The test has been in use in New York State for almost a year and their experiences with the test will be of interest.

A survey conducted before adoption of the new test in New York indicated that the Bacillus stearothermophilus test is 8 times more sensitive than the old Bacillus subtilis test. Cows treated with antibiotics were positive to the new test up to 24 hours beyond the recommended withholding time. Antibiotics injected into one quarter were found in the other quarters 24 hours beyond the recommended withholding time. Milk samples were positive 24 hours beyond the recommended withholding time following parenteral administration of antibiotics. Twenty-five percent of samples from dry treated cows were positive to the new test whereas 0% were positive to the old test.

These facts were brought to the attention of producers and as a result, the condemnation rate following adoption of the new test doubled rather than increase 8 fold as was expected.

Conclusions drawn at the completion of the survey were:

- The new test is 8 times more sensitive than the old test.
- The new test can be lived with if all segments of the dairy industry exercise caution, and if producers withhold treated milk at least 24 hours beyond the recommended withholding period.
- Producers must use a positive system of identifying treated cows.
- Processors must have an ongoing program of producer education and routine testing to assure antibiotic-free milk.

It is clear that the increased sensitivity of the B. stearothermophilus test leaves little room for error.

Abstracted from "New York Experiences with Antibiotic Testing" by Harold S. Rudnick - Dairy and Food Sanitation Magazine - March 1981 - Vol. 1, No. 3

OBSERVATIONS ON CONTAGIOUS ECTHYMA (SORE MOUTH) IN SHEEP

The Virginia Ram Performance Test and sale has been conducted each winter for the past twenty years. An old barn at the Shenandoah Valley Research Station at Steeles Tavern was used for the test the first few years, and then it was conducted at new facilities on a private farm in Augusta County. Five years ago, the test was moved back to the Research Station but in new facilities built specifically for that purpose.

Approximately 150 yearling purebred rams are brought to the test station from flocks throughout the state on a prescribed day in late

January of February. On the day of arrival, physical examinations are conducted and vaccines, including contagious ecthyma, are administered. The rams are confined in pens for the 70 days of the test. At the end of the test period, they are turned out on pasture for conditioning during the month prior to the sale.

Three or four times during the twenty years of the test, outbreaks of sore mouth occurred in the rams after turning on pastures at both the Augusta County farm and the Research Station. Only about 10% or 15% of the rams were involved in the outbreaks each time, but their occurrence so close to the planned sale date caused considerable problems and created doubt about the creditability of yours truly - the person responsible for administering the vaccine. The last outbreak occurred three years ago and the Test Committee and consignors demanded some explanations. About that time, Dr. Bryce M. Buddle came to Virginia Tech from New Zealand to work toward a Ph.D. degree in veterinary virology. He chose to conduct his research on the contagious ecthyma virus and to attempt to answer some of the questions raised by the outbreaks in immunized rams at the test station. Dr. Buddle finished his work in March and has returned to New Zealand. Here are some of the questions that he attempted to answer and his findings concerning them:

- Q. Do ewes immune to sore mouth transmit immunity to the lambs by way of colostrum?
- A. Lambs receive a small degree of immunity from immune ewes. They will become infected when challenged, by inoculation, but the lesions are less severe than those in colostrum-deprived lambs.
- Q. Can sheep that have recovered from the disease transmit it to other flocks?
- A. After all scabs have disappeared, recovered sheep do not shed the virus. However, scabs containing the virus survive for many months in manure and soil, so it is possible for sheep to carry the virus to other farms in scab contaminated soil or manure clinging to their feet or wool.
- Q. Do any conditions such as stress cause relapses and shedding of virus?
- A. There is no evidence that this occurs. However, under experimental conditions, 5 of 19 lambs infected 65 to 75 days previously developed sore mouth-like lesions at the site of initial inoculation 7 to 13 days following simulated stress induced by corticosteroid treatment. Sore mouth virus was not detected in the lesions.
- Q. Is there any benefit from giving a booster dose of sore mouth vaccine?
- A. Yes. Sheep revaccinated in 3 to 5 weeks had more solid immunity than those given one dose. Twenty per cent of the rams at the test station developed lesions (at the site of inoculation) in response to the second dose of vaccine.
- Q. Are there different strains of the sore mouth virus?

A. Eleven isolates from various parts of North America were analyzed by several methods and, based on structural polypeptides, were divided into 4 groups or strains.

Q. Is there cross-immunity between the different strains of the virus?

A. Yes.

Q. Why did vaccinated rams at the test station develop sore mouth lesions when turned on pasture?

A. Since 20% of the rams developed lesions following administration of the second dose of the vaccine, obviously, the vaccine does not induce 100% immunity. Since there is cross immunity between the various strains of the virus, infection by a new strain probably did not occur. The outbreaks experienced in the rams on pasture probably were the result of exposure to large numbers of virulent virus particles.

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