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## Abstracts

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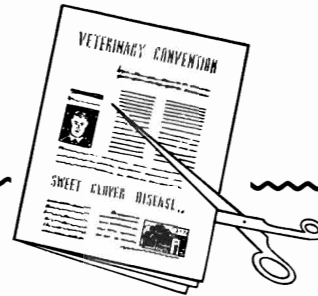
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# ABSTRACTS



**THE EFFECT OF BRUCELLA ABORTUS ON THE BOVINE UDDER.** In the series of experiments described, five normal control cows and six cows infected with *Brucella abortus* were used. It was found that milk not infected and milk from *Brucella abortus* infected quarters did not differ significantly. In obtaining an average of all tests on milk from the non-infected and infected quarters, the chlorine content of infected milk was found to average 0.125 percent, as compared with 0.133 percent for the normal product. The average number of leucocytes per cc. of infected milk was 53,000, as compared with 82,000 in the normal milk while the average count of udder saprophytes was 250 per cc. in the milk of *Brucella abortus* infected quarters and 640 per cc. in the normal product. All of these figures are well within the established limits.

Palpation of the udders for indurations did not reveal any significant differences between the healthy and infected quarters. After slaughtering the animals, a careful study of both infected and non-infected udders failed to reveal differences which could be interpreted as gross lesions produced by *Brucella abortus*.

The microscopic changes observed in the *Brucella abortus* infected quarters were focal in character and were found primarily in the interstitial tissues, although foci affecting the alveoli were the principal lesions in a very small percentage of the quarters. The alveolar lesions consisted of an exudation of neutrophils into the alveolar lumen, associated with fatty degeneration of the alveolar epithelium with a tendency of desquamation

of epithelial cells. More commonly, however, the microscopic pathology was characterized by a dense accumulation of lymphocytes and plasma cells in the subcutaneous and interalveolar tissues.

Approximately 70 percent of the sections from *Brucella abortus* infected quarters contained microscopic changes occurring in all portions of the parenchyma. Each inflammatory area was as a rule limited to the involvement of a few alveoli. The foci were usually so widely separated that more than two lesions were seldom observed in a single section of 1 cm.<sup>2</sup> of parenchyma. The relatively small amount of damage to secretory tissue perhaps explains why the milk was not abnormal.

(Emminger, A. C., and Schalm, O. W. 1943. *The effect of Brucella abortus on the bovine udder and its secretion.* Amer. Jour. of Vet. Res. 4(10):100-109.)

**REMOVAL OF RED CELLS BY SODIUM PENTOBARBITAL.** The following experiments were performed to determine the effect of nembutal on the concentration of red blood cells in the general circulation of the dog.

Two methods were used in conducting this experiment. Prior to anesthetization with nembutal, donor cells containing radioactive iron were injected into several dogs. During anesthesia the spleen was removed and the mass of cells contained in it were determined by the concentration of tagged cells. The second method consisted of anesthetizing the dog with nembutal followed by a transfusion of radioactive red blood cells. Epinephrine was then administered forcing the spleen

to contract and expel its cells into the general circulation diluting the tagged cells. Computation of the red blood cell content of the spleen was determined from this dilution.

Results of the first method showed 30 percent of the circulating red blood cells may be present in this organ under nembutal anesthesia. The second method showed as much as a 37 percent increase in circulating cells when epinephrine was administered to an animal under nembutal anesthesia.

Similar experiments using ether anesthesia showed a decrease in the cell concentration of the spleen plus an increase of cells in the general circulation. Spleens removed under nembutal anesthesia were about four times the weight of those removed under ether anesthesia.

The possible relationship between these findings and the observed delay of onset of shock following administration of nembutal is suggested.

(Hahn, P. F., Bale, W. F., and Bonner, J. F. Jr. 1943. *Removal of red cells from the active circulation by sodium pentobarbital*. *Amer. Jour. of Phys.* 138:415-420.)

**FELINE VIRUS PNEUMONIA AS RELATED TO A PNEUMONIA IN MAN.** On November 7, 1941, a young farmer was admitted to the New Haven Hospital in Jewett City, Conn., with an illness resembling a type of atypical pneumonia which was presumed to be of virus etiology. The history revealed that two other members of the household recently had a similar illness and that one was sick at home; also, that eight of the twelve cats on the farm had died of a respiratory disease recently and that two of the remaining four were sick with the same illness. The possibility that the affected members of the family and the cats were affected with the same agent at once suggested itself and investigation of this possibility was undertaken.

The members of the family and the cats were carefully examined and observed and attempts were made to isolate an etiological agent by transmission experiments. As a result of this work a virus capable of

producing pneumonia in cats similar to that produced in humans was recovered from one of the family cats. The virus fails to affect mice and for this reason appears to differ from most viruses known to cause infections in the respiratory tract.

The evidence so far suggests, but does not establish, the fact that the respiratory infections in the members of the family may have been caused by the same virus.

(Blake, F. G., Howard, M. E., and Tatlock, Hugh. 1942. *Feline virus pneumonia and its possible relation to some cases of atypical pneumonia in man*. *The Yale Jour. of Biol. and Med.* 15(2):139-166.)

### **THE RELATION OF ASCORBIC ACID TO BREEDING PERFORMANCE IN HORSES.**

A three-year-old Belgian stallion had been used as a source of semen for study. After a time the samples became uniformly poor to a point where practically no sperm were present and motility was lacking. Tests revealed that the ascorbic acid content of the semen was very low. Four injections of one gram of ascorbic acid given at three day intervals resulted in an increase in motility of the sperm to nearly 70 percent activity. The sperm count rose to between two and four billion. The ascorbic acid was discontinued and within two weeks the motility had decreased to less than 10 percent.

Three complete cycles of ascorbic acid feeding were carried through. In each, the administration of ascorbic acid improved the semen quality while after the cessation of ascorbic acid feeding, the quality of the semen became reduced.

Controlled experiments were then run on two mares. The values of blood ascorbic acid content obtained from mares showed that there was apparently a significant difference between the good breeders and the difficult breeders. However, the incidence of good breeders with low values raises a question as to individual differences and makes it difficult to indicate a range of blood ascorbic acid which may be considered adequate for good breeding performance. It was also shown by these experiments that mares going on pasture

in the spring show a marked rise in blood ascorbic acid values.

The data on ascorbic acid therapy is inadequate because of the limited number of animals with poor breeding histories available for treatment. Consequently, while the data at hand looks encouraging, additional data must be accumulated before any conclusions can be drawn.

(Davis, G. K., and Cole, C. L. 1943. *The relation of ascorbic acid to breeding performance in horses. Jour. of Animal Sci.* 2:53-58.)

**EFFECTS OF NOVOXIL ON THE STREPTOCOCCI INFECTED UDDER.** The increased use of injections of various antiseptics in the udder for the treatment of bovine mastitis has prompted this study to determine the effect of one of these materials on the quality of the milk and of the pathological changes in the udder.

The infected quarters were treated by giving three injections of 10 cc. of Novoxil at intervals of seventy-two hours. The treated lactating quarters, compared to infected and noninfected quarters left untreated as controls showed an acute inflammatory reaction beginning within twenty-four hours after the first injection. The clinical signs of inflammation were nearly gone by the seventy-second hour, but the percentage of chlorides in the milk continued to rise until the animals were slaughtered. The catalase content increased during treatment but returned to pretreatment level by the time of slaughter. In all of the quarters treated the streptococci concentration per cc. of milk was reduced markedly.

The histopathological lesion common to all treated quarters was the presence of a recent acute inflammatory process superimposed upon chronic changes of mastitis. At least part of the bacterial action of Novoxil may be due to the inflammation produced in the secreting and duct tissues.

Twenty-one quarters of six cows with a history of recurrent mastitis were injected with 10 cc. of Novoxil when in the dry period. The material was left in the quarters until the colostrum was removed

after calving. A slight to moderate swelling following injection was observed in all quarters. Eleven of the twenty-one quarters were found free of organisms after freshening, the milk appeared normal and had a normal reaction in all but four quarters.

In comparing the two different times of treatment, injection during lactation has the following disadvantages:

1. Greater expense because more Novoxil is used.
2. The inconvenience of several trips if only one cow is treated.
3. Greater liability of introducing a new infection.
4. Loss of the whole production of the cow for about two weeks and some loss thereafter.
5. A lower percentage of cures.

The advantages of treatment during the lactation period over the dry period are:

1. All of the infected cows in a herd can be treated at one time.
2. Injections can follow reliable diagnostic tests by only a few days.
3. Quarters may be saved that would be lost if allowed to continue with recurrent inflammation for several months of lactation.

(Spencer, G. R., and Beach, B. A. 1943. *Effect of injections of Novoxil on the bovine udder infected with mastitis streptococci. Amer. Jour. of Vet. Res.* 4(10):45-50.)

**INFLUENCE OF OESTROGENS ON THE SPERM PRODUCTION OF RAMS.** The experiment described in this article was planned to investigate the influence of oestrogens on the sperm production of adult rams. The sperm production and sex drive of two Suffolk rams were studied before and after implantation of the synthetic oestrogen, diethylstilboestrol, in the loose connective tissue of the inguinal region.

The experiment showed that the volume of semen and the number of spermatozoa increase after treatment with stilboestrol, and indicates that stilboestrol affects both accessory secretion and spermatogenesis without any ill effects on

the adult male organs. The effects of the treatment do not occur until seven to nine days after implantation and lasts for five days. There is no effect on sex drive or sperm morphology. Spermatozoa collected from treated animals show a high unexplained tendency to agglutinate; however, they are fertile.

The results of this experiment can be interpreted by saying that stilboestrol stimulates the activity of the pituitary. It is probable that the effect of stilboestrol is due to the release of the gonadotropic hormone already present in the pituitary rather than to the maintenance of a high level of hormone production, because the increase of sperm production only lasts five days, although stilboestrol is still being absorbed. The release of gonadotropic hormone from the pituitary may have an immediate effect on spermatogenesis, but this would not immediately appear in the ejaculate because of the slow transportation of spermatozoa from the testicle to the tail of the epididymis.

(Min-Chueh, Chang. 1942. *Effects of oestrogen (Stilboestrol) on the sperm production of adult rams. Jour. of Endocrinology.* 3(2):192-202.)

**SULFAGUANIDINE THERAPY IN EXPERIMENTAL BOVINE COCCIDIOSIS.** Three experiments were reported in which experimental infections of bovine coccidiosis were treated with sulfaguanidine.

Favorable results were obtained in the case of *Eimeria bovis* infections when the drug was given daily (a) at the rate of 0.1 gram per kg. of body weight for a three-week period beginning two days after inoculation, and (b) 5 gram doses for an eight-day period beginning thirteen days after inoculation.

Treatment of *Eimeria bovis* infections for eight-day periods began three days before and five days after inoculation was ineffective. Marked differences between treated and control infections were not obtained with *Eimeria alabamensis*.

These experiments indicated that sulfaguanidine in the doses given did not destroy all the coccidia. If a treatment fails

to destroy or completely repress all of the coccidia present in an infected animal, its effectiveness against clinical coccidiosis must depend upon its ability to keep the parasite concentration below the level at which the host tissue is severely damaged.

The difference in effectiveness of sulfaguanidine in the two species, *Eimeria bovis* and *Eimeria alabamensis*, may be partly explained by the variation in their life cycles. The exposure of *Eimeria bovis* merozoites to the contents of the intestinal lumen is almost certainly greater than that of the merozoites of *Eimeria alabamensis*. This is true particularly in one generation of *Eimeria bovis* merozoites which must pass from the small to the large intestine. The release of *Eimeria alabamensis* merozoites from their small schizonts is probably done with less violence and rapid penetration of nearby host cells.

It is concluded that sulfaguanidine gives promise of being useful against certain types of bovine coccidiosis.

(Boughton, D. C. 1943. *Sulfaguanidine therapy in experimental bovine coccidiosis. Amer. Jour. of Vet. Res.* 4(10):66-72.)

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