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## Abstracts

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# ABSTRACTS



**FURTHER STUDIES ON THE SUPPLEMENTARY VALUE OF AUREOMYCIN, STREPTOMYCIN, AND VITAMIN B<sub>12</sub> IN A PLANT PROTEIN RATION FOR GROWING-FATTENING PIGS.** An experiment was run on 50 purebred Duroc weanling pigs, equally allotted to five groups. These pigs were farrowed from sows that had been fed well-balanced dry-lot and pasture rations and managed under sanitary conditions during gestation and lactation. They were not depleted of their vitamin B<sub>12</sub> stores before being started on the experiment. These pigs were 10-12 weeks old and averaged 44 lbs. at the start. They were wormed with sodium fluoride.

This experiment was originally planned to extend from weaning to an average group weight of 200 lbs., but terminated at the end of 70 days because of a serious outbreak of bloody dysentery in the basal (control) lot. The other four lots did not become infected even though they were exposed to the infected group for the next four weeks.

These healthy, vigorous weanling pigs were fed various combinations of aureomycin, streptomycin and vitamin B<sup>12</sup> concentrate in an all-plant protein ration composed of yellow corn, soybean meal, alfalfa meal, cod liver oil, essential minerals and the three well-known B vitamins.

Pigs fed the basal ration gained 1.62 lbs. per head daily on a feed requirement of 392 lbs. per 100 lbs. gain. The addition of 15 mg. of pure streptomycin per pound of total ration or 10 mg. of pure aureomycin

per pound significantly increased the average daily gain about 11 to 13 percent and increased the feed efficiency about 14 to 16 percent.

The addition of 12.5 mg. of vitamin B<sub>12</sub> per pound of total ration to the basal ration containing either aureomycin or streptomycin improved the growth significantly above the basal ration, but only slightly above the ration containing either antibiotic.

The supplementation of the basal ration for pigs with each of the two antibiotics and/or vitamin B<sup>12</sup> produced more uniform response, and provided some natural protection against bloody dysentery which infected the basal-fed pigs during the last four weeks of the experiment.

[Briggs, J. E. and Beeson, W. M., Further Studies on the Supplementary Value of Aureomycin, Streptomycin, and Vitamin B<sub>12</sub> in a Plant Protein Ration for Growing-Fattening Pigs. *Journal of Animal Science*. 10: 820-827 (Nov.) 1951.]

**MECHANISMS OF FLUID AND ELECTROLYTE RETENTION IN EXPERIMENTAL PREPARATIONS IN DOGS.** In recent years, considerable attention has been directed to the problem of fluid and electrolyte retention in certain syndromes and diseases. In congestive heart failure and cirrhosis of the liver, excretion of salt and water by the kidneys may be markedly reduced. Fluid and electrolyte retention has been related to such factors as elevated venous pressure, low rate of glomerular filtration, hyperadrenocortical activity in patients with cardiac failure, and to altered

adrenocortical function in cirrhotics. The evidence for these factors is only suggestive and the mechanism by which they operate is not completely understood.

In this report, venous pressure and glomerular filtration rate have been studied in relation to electrolyte and water balances in experimental pericarditis. The observations have been evaluated in an attempt to explain the pathogenesis of edema and ascites.

In this experiment, pericarditis was produced in 13 dogs by the implantation of irritative cellophane. The experimental period was represented by two phases of fluid and electrolyte retention. The acute phase lasted from 10 to 12 days and was characterized by the formation of edema. The chronic stage was characterized by ascites which lasted as long as six months.

Sodium, chloride, and water balances were markedly positive during both phases of pericarditis. Salt and water retention was accompanied by a decrease in hemoglobin and hematocrit reading. Potassium balance was negative for the first day or two post-operatively; in the presence of ascites potassium balance was slightly positive. Nitrogen balance was negative for the first four to eight days of acute pericarditis and in the presence of extensive ascites.

The glomerular filtration rate and renal plasma flow were elevated during acute pericarditis. During the chronic phase, renal function returned to the control level or remained elevated unless protein depletion occurred. In this event the glomerular filtration rate and the renal plasma flow decreased while the filtration fraction increased.

Systemic venous, right auricular and right ventricular diastolic pressures were elevated during acute and chronic pericarditis. An arterial depressor response occurred during acute pericarditis, but arterial pressure was maintained until pre-terminally in chronic cases.

The relation of venous hypertension to the onset of fluid and electrolyte retention during acute pericarditis could not be determined because of the effect attributable to the surgical procedure. Later during the experimental period, a spontan-

eous diuresis occurred in the presence of a high venous pressure and failed to occur with a marked fall in venous tension. This may indicate that other factors were more directly related than venous hypertension due to the retention of salts and water.

The close similarity in the pattern of electrolyte and nitrogen balance between the sham operated dogs and those with acute pericarditis suggests hyperfunction of the adrenal cortex. The low sodium, potassium, high pattern of fecal electrolyte excretion during both phases of pericarditis may also be an indication of altered adrenocortical activity.

[ Davis, James O., Lindsay, Alan E., Southworth, James L., Mechanisms of Fluid and Electrolyte Retention in Experimental Preparations in Dogs. Bulletin of the Johns Hopkins Hospital, 90:64-89 (Jan.) 1952. ]

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## **A** TTEMPTS TO PRODUCE BOVINE HYPERKERATOSIS.

Bovine hyperkeratosis (X-disease, proliferative stomatitis and esophagitis) has been recognized as a disease entity since 1947. The etiology of the disease has remained obscure, despite numerous attempts at transmission or production of bovine hyperkeratosis.

In this study, a natural outbreak of the disease occurred in a group of calves. It was suspected that the feed these calves were eating was responsible for the outbreak. Two groups of experimental calves were selected to go on feeding trials. These calves were fed the same ration that the original calves were getting when they developed bovine hyperkeratosis. One group of experimental calves was maintained in contact with sick calves and in the same environment in which the outbreak had originally occurred. The other group of calves was moved to a new, clean location where there were no sick animals.

Calves in both groups developed bovine hyperkeratosis after prolonged feeding of the ration. This would indicate that the ration in question was responsible for the disease outbreak, and that contaminated

environment and body contact are not essential factors.

[Olson, Carl; Cook, R. H., Attempts to Produce Bovine Hyperkeratosis. Amer. Jour. of Vet. Research, 12:261-272 (July) 1951.]

**A N EVALUTION OF HYALURONIDASE IN LARGE ANIMAL THERAPY.** Hyaluronidase is an enzyme that acts as a "spreading factor". It has the ability to greatly increase the penetration of various substances within body tissues by hydrolyzing hyaluronic acid. Hyaluronic acid normally obstructs the diffusion of invasive substances into the tissues. Experiments to determine the value of hyaluronidase in therapy yielded the following conclusions:

1. Hyaluronidase combined with udder infusions caused no observable reaction in normal or diseased bovine udders, but did not improve the results of treatment of acute or chronic mastitis.

2. Hyaluronidase increased the rate of diffusion of calcium gluconate solutions injected subcutaneously in the bovine but did not increase the rate of absorption.

3. Hyaluronidase did not reduce the irritating effect of chloral hydrate or magnesium sulfate solutions injected subcutaneously; in fact, it increased the size of the resulting inflamed area.

4. Hyaluronidase may be used advantageously in large animal therapy in deep nerve block and in deep infiltrating local anesthesia. It is of questionable value in superficial or subcutaneous anesthesia, and for nerve block anesthesia where the nerves are readily located.

[Roberts, S. J., An Evaluation of Hyaluronidase in Large Animal Therapy. The Cornell Veterinarian, 41:321-331 (Oct.) ]

There is some evidence that chickens may be infected with Brucella under natural conditions, but there is no instance of a human being contracting the disease through the ingestion of eggs.

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