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Abstracts

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ABSTRACTS

DETERIORATION OF SOLUTIONS OF PENTOTHAL SODIUM. The use of bulk solutions of pentothal sodium which are stored for varying periods of time is now a common practice in hospitals, but there is as yet no quantitative data on the changes in the potency or toxicity which may occur under these conditions. It may be assumed from the manufacturer's warning on the package that left-over solutions cannot be safely allowed to stand more than a few hours, that the drug may seriously deteriorate at room temperature.

In an effort to determine how serious this deterioration is and to what extent a toxicity may develop, experimental determinations were made on the stability of five percent bulk solutions of pentothal sodium made up from commercial ampules. Chemical determinations were made by observing the melting point of pentothal acid that was extracted from the bulk solutions with ether, and pharmacological determinations were made by injecting quantities of the bulk solution intravenously into mice to determine the anesthetic and the lethal dose.

A bulk solution of 5 percent pentothal sodium prepared from commercial ampules and kept for 65 days at room temperature was found by chemical analysis to deteriorate steadily with time. When kept in the refrigerator, the rate of deterioration was greatly reduced. However, the intravenous injection of a bulk solution that had been stored for 13 days at room temperature failed to reveal any significant change in the anesthetic dose or the lethal dose in mice.

The experimental results obtained indicate that the practice of storing bulk solutions of pentothal sodium until a turbidity is evident in the solution, at which time it is discarded, is generally satisfactory. Until further information is available, it should not be kept longer than 3 days at 18–22°C. or 7 days at 5–6°C. It is not wholly satisfactory to depend on the appearance of the solution, because the development of turbidity is gradual and deceptive. Until further data is obtained, it is suggested that a reasonable clinical procedure would be to keep the bulk solution in the refrigerator except during actual withdrawals. The solution should always be discarded at the first sign of turbidity, and in any case, discarded after a predetermined time interval, preferably, 7 days.

[*M. H. Robinson, Deterioration of Solutions of Pentothal Sodium: Anisthesiology (March, 1947):166–175.*]

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THE INTERPRETATION OF WHEY AGGLUTINATION TEST RESULTS IN COWS VACCINATED WITH BRUCELLA ABORTUS, STRAIN 19. The widespread use of *Brucella abortus* strain 19 vaccine has somewhat clouded the interpretation of blood-serum agglutination test results in vaccinated cattle

because of the appearance of an agglutination titre for a variable period following vaccination. The result has been a need for a practical means of differentiating vaccinated from infected animals in a given group of reactors to the blood-serum agglutination test.

One of the characteristics of virulent strains of *Br. abortus* is a tendency to localize in the bovine udder. Research workers have investigated the diagnostic possibilities of a whey-serum agglutination test in unvaccinated cattle. The results of this work have shown the whey agglutination test to be of value for the diagnosis of bovine brucellosis.

Since bacteriologic culture of milk samples drawn from vaccinated cows has only rarely yielded strain 19, it was thought that a method for the differentiation of vaccination with strain 19 from active infection might be developed by use of the whey agglutination test, but it had to be determined that the presence of whey agglutinins in vaccinated animals is correlated with only virulent mammary infection.

Tests were carried out on 50 cows, in 4 herds, and the results indicated that vaccination with *Br. abortus* strain 19 is not followed by udder infection with vaccine strains. It was also determined that vaccination is followed by the presence of udder agglutinins in low levels for no longer than 3 months.

Further tests, involving over 300 cows, were run in order to ascertain the value of the whey test in determining the exact status of cows which were known to have been vaccinated, but which were under suspicion of superimposed virulent infection. All animals studied in the second phase had been vaccinated with *Br. abortus* strain 19 at least 3 months previously. Results of these studies indicate that a whey titre of 1:50 in one or more quarters is almost definitely indicative of infection, and that an animal with a whey titre of 1:25 in any quarter should be under suspicion of shedding *Br. abortus* in her milk, since a high percentage of them are also infected.

Since the whey test appears to be a practical method of diagnosing udder infections except with in the 3-month period following vaccination, regardless of varying levels of blood-serum agglutinins, it would appear to be a promising aid in the differentiation of healthy vaccinated, from virulently infected blood test reactors.

[*J. Traum, D.V.M. and W. E. Maderious, D.V.M. The Interpretation of Whey Agglutination Test Results in Cows Vaccinated with Brucella Abortus, Strain 19: Am. Jour. of Vet. Research (July, 1947): 244–246.*]

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THE USE OF STILBOESTROL DIPROPIONATE IN THE TREATMENT OF RETAINED PLACENTA AND PYOMETRA IN CATTLE. Although it is generally accepted that stilboestrol is not a specific treatment for the removal of retained placenta, and many veterinarians have not had a great deal of success with its use, Dr. Chesney has employed it in his practice very successfully.

During the past 5 years, Dr. Chesney has employed stilboestrol on all cows suffering from retained placenta, using 10 mg. for the channel island breeds, and 20 mg. for the larger breeds. If the animal had not cleaned within 36 hrs. the first, injection was made, and in 12-36 hrs., 60 percent of the cases expelled the placenta and no pyometra followed. The placenta seemed to be much healthier in these cases than in those removed manually, and there was an absence of any putrid odor. In some of the cases which were not expelled, the placenta was found to be on the floor of the vagina, quite loose from the uterus. If the placenta had not been expelled following the first injection, then another injection was given 3 days after the first. Quite often the placenta came away within 24 hrs. after the second injection.

The number of pyometra cases in the 200 cows treated by Dr. Chesney was quite small. If some veterinarians have had difficulty with permanent damaging effects by stilboestrol, it is probably due

to the dosage used. Stilboestrol, if not specific, is a very suitable drug to use for this purpose, as it is a stimulant to the uterus and a great aid in the expulsion of the placenta in it's entity, thus reducing the posibility of a subsequent pyometra.

Pyometra may also be treated successfully with stilboestrol. Pyometra is considered to be a direct result of hand cleaning. Forty-three cows, which had been hand cleaned and developed pyometra, were treated with 30-50 mg. of stilboestrol. Forty-two of these animals came in heat either after the first or second injection. In 2 to 7 days after estrus, all the uteri were empty, regaining tone, and the cows conceived in 60-140 days following partuition.

[*R. W. L. Chesney. The Use of Stilboestrol Dipropionate in the Treatment of Retained Placenta and Pyometra in Cattle: Veterinary Jour. (July, 1947):233–237.*]

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THROMBOPLASTIC PROPERTIES OF PENICILLIN AND STREPTOMYCIN. It is thought that the most important pharmacological property of penicillin and streptomycin, next to their chemotherapeutic value and low toxicity, is their thromboplastic activity. A study of more than 200 cases, both human and animal, reveals that penicillin and streptomycin produce a marked acceleration in the clotting time of whole blood. This effect is evident within 15 or 20 minutes after injection.

When the new sodium salt of crystalline penicillin (C.S.C.) was used to replace amorphous penicillin, a less striking thromboplastic effect resulted. Subsequent studies of 4 crystalline types of penicillin showed a variable increase in clotting time for each. Type X was the most thromboplastic, followed by type K, G, and F, in that order. Types X and G exhibit a synergistic action when used together.

The thromboplastic effect of single dosages of penicillin or streptomycin lasts only for a few hours; in rabbits and cats repeated dosage will cause a prolonged decrease of coagulation time. Proper doses of dicoumarol administered by stomach will counteract the prolonged thromboplastic effect of the drugs. Although several case reports of thrombotic accidents following the use of penicillin are on record, they are extremely rare. This is probably due to the checks and balances as well as the compensatory and reserve faculties of the bodies of higher animals.

[*D. I. Macht. Thromboplastic Properties of Penicillin and Streptomycin: Sci., 105:313–319.*]

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THE AMOUNT OF DDT FOUND IN THE MILK OF COWS FOLLOWING SPRAYING. When it was shown that DDT may be absorbed through the skin of animals, considerable interest was shown in the possibility that animals sprayed with DDT for fly control might produce milk containing toxic doses of DDT. To test this possibility, an experiment was devised to show the effects of very heavy spraying and the effects of the spraying schedule.

Sixteen cattle out of a herd were divided into 4 lots, and except for the spraying, were treated exactly as the other cattle in the herd. No precautions were taken to keep the animals from licking themselves. The entire herd had been sprayed with 0.25 percent DDT 2½ months prior to the experiment.

Lot I was sprayed with 2 qts. of 5 percent suspensible DDT spray per animal and lot II with 2 qts. of 1 percent emulsion. Lots III and IV were sprayed on the same day every other week with 2 qts. of 0.25 percent DDT spray. All spraying was done with a 3-gal. compressed-air-sprayer after the evening milking. Spraying was started July 15, and discontinued Aug. 30.

Milk samples were taken in the evening and analyzed for DDT content. The DDT was separated from the milk and concentrated by a slight modification of

the method of Schecter, et al. Color densities were determined by using the Bausch and Lomb colorimeter.

All samples taken the seventeenth day after spraying were positive to the qualitative tests. On the twenty-fourth day, the animals sprayed with 1 percent emulsion were giving off 18 to 19 parts per million and those sprayed with 5 percent wettable powder were giving off 5-12 p.p.m. Animals sprayed with 0.25 percent DDT were giving off less than 1 p.p.m. At the end of their lactation period, 119-126 days after the spraying, 2 cows were still giving off appreciable amounts of DDT. The maximum concentration of DDT, 33.6 p.p.m., appeared in the milk 20 days after spraying started. More DDT appeared in the milk the third month than in the second month after spraying stopped.

Biological tests were run on young mice. Milk from test cows having the highest concentration of DDT was fed to 12 young mice but no appreciable effects were noted, either on the test mice, or on their progeny.

Although all animals sprayed with DDT gave off some DDT in their milk, it is generally concluded that the amount of DDT is not toxic. Therefore, DDT is a relatively safe spray to use for the control of arthropods in dairy cattle.

[*D. E. Howell, H. W. Cave, V. G. Heller, W. G. Gross. The Amount of DDT Found in the Milk of Cows Following Spraying: Jour. of Dairy Science (Sept., 1947): 717–721.*]

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THE EFFECT OF FEEDING THIOURACIL ON THE BODY WEIGHT OF NEW HAMPSHIRE COCKERELS. The ability of thiouracil and related compounds to inhibit thyroid activity with a consequent hypothyroidism has been well established. The effectiveness of thiouracil and thiourea by inhibiting the activity of the thyroid has been demonstrated in the case of compensatory hypertrophy of the thyroid, when these materials are fed to baby chicks.

Assuming that hypothyroidism is conducive to fattening, various experiments have been performed in feeding thiouracil to broilers and conflicting results have been obtained. The feeding of thiouracil resulted in marked improvement in the dressed grade, and a gain in weight in one experiment. But contrasting results have been obtained by other experimenters who have found the growth rate and feed consumption was depressed, and the dressed appearance was less desirable.

In an experiment conducted in Louisiana, cockerels which were 16 weeks old and averaged 3.65 lbs. were used. Thiouracil was fed in 0.025 percent, 0.05 percent, and 0.1 percent amounts in the mash diet. Thirty birds were used in such groups, as well as 30 in a control group. The birds had access to yards which had a good covering of carpet grass, bermuda grass, and lespedeza. The mash was fed ad libitum.

At the end of 4 weeks, the birds were weighed and comb height plus length was measured. There was a progressive increase in weight gains with the increase in thouracil as part of the ration. The birds fed 0.1 percent thiouracil gained an average of over 0.4 lbs. more per bird than the control group. The comb height plus length gains tended to decrease with increasing doses of thiouracil, indicating that thiouracil was exerting a definite physiological action. It was also noted that the mash consumption per pound of gain was less in the higher thiouracil groups, indicating the birds were more efficient in the utilization of mash.

At subsequent weighing periods, however, the control groups and the 0.025 percent thiouracil group showed a larger increase in weight than the other 2 groups. Thiouracil may be of definite benefit in fattening cockerels, but more experimental work will have to be carried out before this can be proven conclusively.

[*J. P. Mixner, B. B. Tower, C. W. Upp. The Effect of Feeding Thioracil on the Body Weight of New Hampshire Cockerels: Poultry Science (Sept., 1946):536–538.*]