Summary Only

BRUCELLOSIS IN ANIMALS AND MAN

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BRUCELLOSIS in cattle has been controlled to a considerable extent through the use of calfhood vaccination with Strain 19 *Brucella abortus*. Vaccination alone, however, will not eradicate the disease. The immunity is not absolute but can be overcome by exposure to virulent or massive infection. Because an important aspect of brucellosis is the effect on public health, eradication must be the objective. Vaccination will greatly reduce the incidence of infection by preventing abortion. Transmission of brucellosis among cattle occurs chiefly when an animal aborts. Vaccination will not prevent an animal from becoming a carrier of infection even though there is no evidence of acute brucellosis. It will not, therefore, eradicate or cure brucellosis; it will assist in controlling it. It will not eliminate the danger of human infection, nor change the course of the disease in an animal already infected.

Vaccination has been the backbone of the control programme in the United States and is responsible to a considerable extent for the success being attained in the eradication programme. Eradication is proceeding under an area plan wherein intensive testing is conducted in a county until the objective is accomplished. The first objective is modified certified brucellosis-free status. To accomplish this, the incidence of infection must not exceed 1 per cent. of the cattle and 5 per cent. of the herds. Testing is continued until all herds are clean when the county will be certified brucellosis-free.

The method of testing consists of milk-ring testing a herd. The milk-ring test is based on the presence of specific antibodies in milk, and is conducted on a single composite sample of milk from the entire herd. If negative, the herd is re-tested in six months. If suspicious, each animal in the herd is blood tested to identify reactors. These are disposed of by slaughter, and the herd re-tested in not more than 60 days. When two consecutive negative tests have been obtained the herd is considered brucellosis-free under the area plan. A herd retains its certification under the area plan by passing semi-annual milk-ring tests. In beef cattle under range conditions only 20 per cent. of the herd need be tested. An attempt is being made to determine the status of beef herds by blood tests on cull cows at slaughterhouses.

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In California, whey testing of individual cows is being investigated in co-operation with the United States Department of Agriculture. Conditions in that State are not conducive to frequent and costly blood testing. The evidence indicates that, under California conditions, the whey could be substituted for the blood test in lactating cows. The investigations have been continued in New Zealand and from the evidence obtained on 284 herds involving 10,797 cows it is concluded that the milk-ring test on a herd basis and the whey test on individual animals could be employed in an eradication of brucellosis programme in New Zealand. It is much less costly than blood testing and has the distinct advantage over the latter in that adult vaccination will cause a blood reaction that is likely to persist indefinitely, whereas it will disappear within 90 days from whey.

DISCUSSION

E. D. FIELDEN: Mr Fielden congratulated Professor Cameron on his paper and outline of the eradication scheme at present taking place in the U.S.A. The opener expressed disappointment with the fact that New Zealand always appeared to be lagging behind other Western countries in attempting to eradicate those diseases communicable to man and hoped that some time in the future we would take the initiative in this respect. Fortunately, worthwhile attacks were now being made on some of these diseases, such as hydatids and bovine tuberculosis, and in time perhaps the elimination of brucellosis would be attempted.

The critical examination of diagnostic tests other than blood tests for brucellosis in both dairy and beef cattle was very pertinent because of the practical difficulties involved in blood sampling in New Zealand. With beef cattle, in particular, real difficulties were encountered in the field in interpreting results of blood tests because so many beef cattle had been vaccinated when sexually mature. Because of this, persistent vaccination titres often led to confusion in differentiating cases caused by active infection. A re-examination of the efficacy of the blood test, the milk test and the vaginal mucous test as a means of diagnosing active brucella under New Zealand conditions appeared at this stage to be important both from the point of interpreting field cases and for any eradication policy contemplated in the future.

As far as Strain 19 was concerned, it is a sorry fact that, in spite of widespread extension, many cattle breeders were not using this vaccine. In a country where brucellosis is still very rife we should continue to press for the extensive use of Strain 19, emphasizing in particular the importance of proper vaccination procedure and of *calfhood vaccination.*

PROFESSOR CAMERON: In regard to eradication of the zoonoses, it should be pointed out that New Zealand holds an enviable position in freedom from disease and in fact is one of the few countries from which the U.S. Department of Agriculture permits imports.

As far as brucellosis in beef cattle is concerned, vaccination should prove sufficient. Provided they are not in contact with dairy cattle, no serious public health problem exists with beef cattle.

Q.: *Where eradication has been successful has there been a rise in incidence of* Vibrio fetus?

A.: I do not know.