

DETECTION OF SERUM ANTIBODIES TO RINDERPEST IN BOVINES BY COUNTER IMMUNOELECTROPHORESIS

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Rinderpest eradication scheme, Palghat, Kerala

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Consequent to the extensive loss of bovines during 1964, rinderpest eradication scheme was launched on a massive scale during 1965 in Kerala. The number of outbreaks decreased substantially, and was free from 1969 to 1972. But the infection did not die out, instead stable lurking foci developed, and from 1974 onwards an average of 2.15 outbreaks for 3500000 heads of bovines annually is continuing, and complete eradication seems to be an elusive goal. This happens due to clandestine trade of animals by passing the boarder check post of the state, and also by the wild ruminants. The possibility that the vaccinated animals can be infected, and become active carriers of the virus is still unresolved (Blood *et al.* 1981). Eradication can be contemplated if the prevalence in the domestic species is reduced to a suitable level by vaccination. Though the vaccination programmes were started way back in 1965, no methods were adopted to monitor the immunological status of the animals of the state. So in order to detect the presence of antibodies to rinderpest, blood serum of bovines were collected from various parts of the state at random, and subjected to counter immunoelectrophoresis (CIE) technique to find out immunologically depleted areas of the state for appropriate measures to reach the "rinderpest 0" by 1990 proposed by the sub-committee for rinderpest of the National committee on animal health.

Materials and Methods

Six hundred and twenty one serum samples of the bovines collected from various districts at random of the state during the period from June 1987 to June 1988 were used for the test. The materials on receipt were placed in a deep freezer at -20°C after adding thiomersal as preservative. CIE technique as described by Rytel (1979) was adopted within a week on receipt of the samples. Agarose with high electroendosmosis at 0.85 g/dl concentrations was used for all the tests.

Results

Out of the 621 serum samples examined, 486 showed precipitin bands. The bands varied in location of their formation, from the centre between the wells to very near on the boarder of the anodal wells.

Curved multiple bands and straight line bands were also observed. The resolution of the bands varied in their intensity. The results showed that 78.26% of the samples were positive for precipitin bands.

Discussion

An effective monitoring technique for the detection of circulating antibodies to rinderpest was not in vogue in Kerala, though the relationship between circulating antibodies and resistance is only an assumption (Bansal, 1986). Jerkins and Walter (1946) believed that a definite correlation existed which was supported by Scott and Brown (1958). Nakumura (1958) found that animals with compliment fixing antibodies were resistant to challenge.

Immuno electroprecipitin methods were originally used by Bussard (1959) and was first applied in rinderpest diagnosis used by Ali and Lees (1974) and later on Bansal *et al.* (1981), Rosittier (1985), and Sulochana (1987). Bansal *et al.* (1983) used this test to detect the presence of antibodies in different species of animals vaccinated with tissue culture rinderpest vaccine. Bansal (1986) could detect precipitins in 100 % of samples collected at second to seventh week post vaccination with tissue culture rinderpest vaccine. In the present study precipitins could be detected only in 78.26% of the samples collected. The lower percentage of the results obtained may be due to that the samples were taken irrespective of the history of vaccination, and also for the period after vaccination to the date of collection. Though the over all immune status is satisfactory, district var concentrated studies are needed further to pin point depleted areas for remedial measures.

Ideally the precipitin band formed will be a long straight line between the wells, but this is seldom achieved in testing unknown samples, and very frequently observed is a curved precipitin band near the antibody well, Shape, position, and the intensity of the resolution of the band is not important, but it is important that it occurs in between the two wells (Rytel, 1979). Size, shape, position, and intensity of resolution of the bands varied in this study also. Multiple precipitin bands between the wells observed in a few cases is also recorded in the diagnostic aspect of the test (Sulochana, 1987) where hyperimmune serum was used in the anodal well.

Summary

Six hundred and twenty one serum samples of the bovines collected from various parts of the state at random when subjected to CIE technique showed that 87.26% of the animals had antibodies to rinderpest. District var intensive studies are required further to pin point antibody depleted areas of the state.

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