

12. SERO-EPIDEMIOLOGY OF RINDERPEST IN BOVINES IN SRI LANKA USING THE ENZYME LINKED IMMUNOSORBENT ASSAY (ELISA) TECHNIQUE

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The objective of this study was to calculate the prevalence percentage of antibodies against rinderpest virus ("prevalence") in bovines (cattle and buffalo) in Sri Lanka and to study the factors, which are associated with Sero-prevalence. Approximately, 0.2% of the bovine population (n = 4397) in 23 of 25 districts were sampled using a stratified random sampling procedure, during a 39 month period beginning from June 1992. The number of bovines sampled from each district was statistically large enough to detect the presence of rinderpest antibodies, assuming a 5% island-wide prevalence at 95% confidence level. Serum antibodies were detected using the competitive Enzyme Linked Immunosorbent Assay (ELISA) supplied by the IAEA. A bovine with the percent inhibition value of >50% was considered as positive. Data were summarised by cross-tabulating the test results with potential risk factors and calculating the Odds ratios.

The median number of farms visited per district was 36 and varied from 15 - 122. The overall prevalence was 8% and varied from 0% (in 8 districts) to 40% across other districts. The prevalence in non-vaccinated bovine (n = 4101) and in vaccinated bovines (n = 296) were 5% and 14%, respectively. Bovines in 9 of the districts sampled had never been vaccinated against rinderpest. Surprisingly, the Sero-prevalence was relatively low in the vaccinated bovines sampled. Most Sero-positive bovines (69%) were >4 years old and were at four times higher odds of being Sero-positive compared to < 1 year old animals. Bovines from the dry zone (annual rainfall 20 - 35") low country (DL) were at ten times higher odds of being Sero-positive compared to those from intermediate zone (annual rainfall > 35 - 85") low country. High Sero-positivity in DL may be attributed to the higher bovine density (>30 bovines/sq. km of land) in that region. A majority of bovines in DL are reared under extensive management system, where they grazed freely during the day and were kept in open paddocks during the night. None of the bovines from intermediate zone upcountry, and the up and mid countries of the wet zones (annual rainfall >55 - 125") or from the lower bovine density (<30 bovines/sq. km of land) areas were Sero-positive.

This is the first island wide study on Sero-prevalence of rinderpest in Sri Lanka. This study shows the advantages of using a serologically sensitive test, such as ELISA, in studying Sero-epidemiology of a disease with low prevalence. The prevalence was highest in the northern, eastern and north-central provinces. The spread of rinderpest from the first location of the outbreak, which was in eastern province in 1987, is attributed to the movement of bovines for slaughtering purposes. It appears that the spread of rinderpest could be reduced by controlling animal movement. Apparently, rinderpest had shifted from an epidemic form in 1987 - 1989 period, to an endemic form from 1990, towards areas with high bovine density (>30 bovines/sq. km of land). Furthermore, the extensive management system mostly practised in the DL regions, in which animal-to-animal contact is more frequent, had contributed in the spread of

rinderpest. The prevalence was higher in older bovines probably due to exposure to natural infection during the last epidemic.

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