Screening of elephants (*Elephas maximus*) for Foot and Mouth Disease Virus antibodies by liquid phase block ELISA

R. Hedge, A.R. Gomes', P. Giridhar, M.D. Venkatesh, K.J. Sudarshan, Shivshankar and C. Renukaprasad

A total of thirty seven serum samples were collected from wild and captive elephants at Shri Chamarajendra zoological gardens, Mysooru, Sakkarebailu elephant camp, Shivamogga, Bandipur and Nagarahole National Park, during 2007. The elephants, eighteen numbers at Shri Chamarajendra zoological gardens, Mysooru and Sakkarebailu elephant camp, Shivamogga, were vaccinated with commercially available trivalent FMD vaccine from Indian Immunologicals and Intervet.

As there is no prescribed dose or schedule of vaccination in elephant or other wild animals, these animals were vaccinated with 6 ml of the vaccine and calves were vaccinated with 4 ml of the vaccine. No boosters were given but the vaccination was repeated every six months. Serum was collected from these animals after twenty one days post vaccination. Whereas, there was no history of vaccination in elephants maintained at Bandipur and Nagarahole National Park. Serum was collected from nineteen animals from this place which were not vaccinated to make a comparative study. The serum samples so collected were subjected to liquid phase block ELISA (LPB-ELISA). In brief, a series of two fold dilutions of the test subject were subjected to liquid phase block ELISA (LPB-ELISA).

In brief, a series of two fold dilutions of the test subject were subjected to liquid phase block ELISA (LPB-ELISA). The results of the present study are presented in Table 1.

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<thead>
<tr>
<th>Status</th>
<th>Total number</th>
<th>Antibody titer &gt; 1.8</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>O</td>
</tr>
<tr>
<td>Vaccinated</td>
<td>18</td>
<td>14</td>
</tr>
<tr>
<td>Unvaccinated</td>
<td>19</td>
<td>0</td>
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Table 1. Antibody titer (log10) against different FMD serotypes in the serum samples of vaccinated and unvaccinated elephants.

As per PD-FMD (Project Directorate on Foot and Mouth Disease), a titer of log_{10}1.8 and above are considered protective in FMD vaccinated domestic animals. The same titer was considered to be protective in elephants in our study as there is no vaccination followed in wild animals. Of the eighteen animals vaccinated fourteen animals showed a titer of >1.8 against serotype O and all eighteen animals had a titer of >1.8 against both A and Asia 1 serotype. Thus, results indicate that there was a seroconversion in the vaccinated elephants both at Shri Chamarajendra zoological gardens, Mysooru and Sakkarebailu elephant camp, Shivamogga. All these animals showed hundred per cent protection against serotype A and Asia-1 and 83.33 per cent seroconversion was seen against serotype O vaccination with monovalent O type vaccine may help in improving the titer against serotype O. The animals, nineteen numbers at Bandipur and Nagarahole National Park which had no history of vaccination did not show the protective response against O and Asia 1. But four animals showed a titer of >1.8 against serotype A whereas rest fifteen animals were having a titer of <1.8 which means that the elephants had an exposure to the virus in the field. From the study it is evident that there was seroconversion in vaccinated animals. Since there is only meager information available on this, further studies may help in making a conclusion. Vaccinating the animals to maintain immunity and to prevent the disease is worthwhile.

References


Email: amithagomes@gmail.com