

Thesis Title Determination of Protective Antibodies after
Rabies Vaccination: Comparison of Different
Cell Culture Vaccines

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ABSTRACT

In this study, the rapid fluorescent focus inhibition test (RFFIT), the method for measuring protective antibody against rabies virus in tissue culture by means of immunofluorescence staining, and ELISA for detecting antibody against rabies outer most protein, were established for measuring antibody after rabies vaccination. The results were compared with those of the standard mouse neutralization test (SMNT) used as a reference method.

The study sera were obtained from 6 groups of post-exposure vaccinees. The first group of 9 vaccinees received PCEC 1.0 ml IM on days 0, 3, 7, 14, 28, and 90 (PCEC conventional dose). The second group of 11 vaccinees received PCEC 1.0 ml IM on days 0, 3, 7, 14, 28, and 90 and received HRIG 20 IU/kg on day 0 (PCEC conventional dose plus HRIG). The third group of 11 vaccinees received PVRV 0.5 ml IM on days 0, 3, 7, 14, and 28 and received HRIG 20 IU/kg on day 0 (PVRV 5 doses plus HRIG). The

fourth group of 15 vaccinees received 2 injections of PCEC 1.0 ml IM on day 0 and 1.0 ml IM on days 7, and 21 (PCEC 2-1-1). The fifth group of 15 vaccinees received 2 injections of PCEC 1.0 ml IM on day 0 and 1.0 ml IM on days 7, and 21 and received HRIG 20 IU/kg on day 0 (PCEC 2-1-1 plus HRIG). The sixth group of 11 vaccinees received 2 injections of PVRV 0.5 ml IM on day 0 and 0.5 ml IM on days 7, and 28 (PVRV 2-1-1, D0-7-28).

The correlation coefficient between SMNT and RFFIT determined by Pearson's test was 0.92 for group 1, 0.93 for group 2, 0.96 for group 3, 0.92 for group 4, 0.86 for group 5, 0.97 for group 6, and 0.91 for 431 sera from all groups of vaccinees. When 0.5 IU/ml was taken as the cut off value for determining the positive sera, the specificity and sensitivity of RFFIT were 93.0% and 98.7 % respectively.

The ELISA technique was used for determined rabies-glycoprotein binding antibody in 115 sera from all group of vaccinees. The Pearson's correlation coefficient of SMNT and ELISA was 0.79. When 0.5 IU/ml was taken as the cut off value for determining the positive sera, the specificity and sensitivity of ELISA were 97.4 % and 78.9 % respectively.

In comparison study of PCEC vaccination, the conventional dose, conventional dose plus HRIG were compared with 2-1-1 and 2-1-1 plus HRIG. The NT Ab (> 0.5 IU/ml) was demonstrated on day 14 and persisted for 1 year in all vaccinees. There was significant suppression of antibody response by HRIG on day 14 in group received PCEC conventional dose plus HRIG vs PCEC

conventional dose and on day 21 in group received PCEC 2-1-1 plus HRIG vs PCEC 2-1-1. The 2-1-1 regimen evoked antibody response comparable to that of conventional dose.

In this study, the immunogenicity of PVRV and PCEC were comparable.