

Quantitative Analysis of Humoral Immunity Degradation

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Recently the half-life of mumps virus-specific serum antibody was estimated to be ~500 years, based on antibody levels detected using enzyme immunoassay (EIA). Using a virus plaque reduction neutralization (PRN) assay, sera from subjects immunized with two doses of live attenuated mumps virus vaccine, and a simple model of inactivation kinetics, we determined the half-life of mumps virus-specific neutralizing antibodies to be between 7 and 9 years, depending on the target virus strain used in the assay. Double logarithmic transformation has been used for data normalization to calculate mean half-life time confidence interval. The distribution free approach has been used for estimation of the median half-life time. The implications of using two different methods for measuring antibody (EIA versus PRN) and different model assumptions are discussed.