CALCULATION OF AVIDITY INDICES IN ELUTING TOXOPLASMA AVIDITY ASSAYS

ANDREAS HASSL, K. SIMON, H. ASPOCK. University of Vienna, Austria

Measuring avidity of IgG-antibodies gains growing importance in the rapid serodiagnosis of acute toxoplasmosis in man and animals. Yet, avidity of antibodies directed against complex antigen mixtures is a multifactorial interaction between antibody affinities and epitope frequencies. Until now avidity indices in eluting IgG-avidity enzyme linked immunosorbent assays (ELISA) with Toxoplasma antigens are calculated either inaccurately by the single serum dilution method or intricately by the end-point titration technique.
Taking advantage of the partial linear correlation between adsorption values and antibody quantities in ELISA-tests an avidity index calculation was developed based an a division of shift line triangles of the two OD graphs. In theory the measurement of only two serum dilution values are needed for an accurate index calculation - in laboratory practice three to four dilution steps must be performed to determine IgG-avidity and IgG-quantity of an unknown serum simultaneously and efficiently.
This calculation technique was applied to adsorption values of avidity-ELISAs in experimental ovine toxoplasmosis and in suspected primary infections in man. The results were compared to the ones of true affinity measurement, of the one point calculation method, and of the end point titration technique. The scheme results in a simplification of the avidity calculation process, in a considerable reduction of the test expenditure and costs and it may lead to a readjustment of first-line serodiagnosis in toxoplasmosis in future.