Determination of Low-Avidity Antibodies with ELISA: An Alternative Principle for the Diagnosis of Recent Infections

The presence of low-avidity antibodies in a patient’s serum has been proved if the ELISA extinction is significantly reduced by urea treatment. For an objective interpretation the relative avidity index (RAI) can be calculated out of the measured values with and without urea incubation and expressed as a percentage. A RAI below 50% indicates a recent infection.

One example for the application of this principle is the diagnosis of infectious mononucleosis (detection of low-avidity antibodies against Epstein-Barr virus capsid antigen):

In a EUROIMMUN study all 22 sera of freshly infected patients showed a relative avidity index below 50% (15% to 47%; average value: 28,1%). In each of the 25 patients with a previous EBV infection the RAI was considerably higher (58% to 98%; average value: 75,5%).

Investigations in measles, mumps and varicella zoster lead to analogous results. Respective test systems are being prepared.

Conclusion: By investigating low-avidity antibodies of class IgG, a parameter has been established in order to reveal recent infections serologically using ELISA or indirect immunofluorescence and to differentiate them from relapses and reinfections without difficulty.