

INTRODUCTION TO DIFFERENT TYPES OF IMMUNO ANALYZERS AND ITS USEFULNESS IN DIFFERENT TYPES OF IMMUNO ASSAYS

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ABSTRACT

ImmunoAnalyzer are used for the estimation of metabolic activity of vitamins, hormones, for performing immuno assays, detection of blood clot etc. by using Human plasma. ImmunoAnalyzer like, Abbott AxSym is used for efficient therapeutic drug monitoring and for serology tests. It has the capability to add tests while the instrument is operating. The throughput rates range from 80 tests/hour up to 120-tests/hour average. In addition to automation, the IMx system offers rapid assay times and calibration curve storage without sacrificing clinical efficacy. The fully automated IMx immunoassay analyzer was used to develop a system for the detection of IgG and IgM antibodies to rubella virus for immune status screening and diagnosis of primary infections. Anti-human IgG or IgM antibody coupled to alkaline phosphatase enzyme followed by methylumbelliferyl phosphate substrate was used to detect the presence or absence of antibodies specific to the antigens on the solid phase. To evaluate the efficacy of the IMx rubella IgG assay, immune status screening was performed with a clinical patient population of 501 sera. When compared to an IgG specific enzyme immunoassay and passive hemagglutination assay the agreement was greater than 99%. The IMx rubella IgM assay was utilized to determine the presence of rubella specific IgM antibodies in 462 sera. These results were compared to IgM specific enzyme immunoassay results and also demonstrated greater than 99% agreement. Seroconversion following rubella vaccination of susceptible individuals was demonstrated by IgG and IgM antibody responses as early as two weeks postvaccination. By the use of LIASON Immunoanalyzer Measles and Mumps IgG Assays can be rapidly performed. The BioPlex 2200 Antiphospholipid Syndrome (APLS) IgG, IgM, and IgA kits are the first and only fully-automated, random access multiplex flow immunoassays for the semi-quantitative detection of IgG, IgM, and IgA antibodies to cardiolipin (CL) and beta-2 glycoprotein I (B2GPI). Vitamins assays can also be performed very rapidly. The FDA-cleared STA-StaclotdRVV Screen and Confirm are fully automated assays for detecting lupus anticoagulants (LA) in patient plasma by the diluted Russell viper venom method. The Ecarin Chromogenic Assay (ECA) is an enhancement of the Ecarin Clotting Time (ECT), the reference method for determining direct thrombin inhibitors (DTIs) such as argatroban. DPC Immulite is a Diagnostic Products Corporation (now a division of Siemens) manufactured immunoassay system, offering fully integrated operation.

KEY WORDS

Abbott AxSym, IgG, IgM, IgA, Liason, BioPlex 2200, STA-StaclotdRVV

INTRODUCTION:

Different types of immuno analyzers:

1) AbbottAxSym:



AbbottAxSymImmuno Analyzer

AbbottAxSym which is manufactured by Abbott Diagnostics has a high capacity and reliable chemistry analyzer designed to meet the needs of today's laboratories.

Abbott AxSym is used for efficient therapeutic drug monitoring and for serology tests. This third-generation immunoassay system with broad testing features has random, continuous-access, and STAT processing capabilities. Abbott

AxSYM utilizes three technologies such as fluorescence polarization immunoassay, microparticle enzyme immunoassay, and the new ion-capture immunoassay. With the use of AxSym device, you can run a wide range of immuno-diagnostic tests at a time. Moreover, it has the capability to add tests while the instrument is operating. The throughput rates ranges from 80 tests/hour up to 120-tests/hour average.

2) Immulite 2500 Immunoassay System:



Immulite 2500 Immunoassay System

Immulite 2500 Immunoassay System is manufactured by Siemens Medical Solutions Diagnostics. It is approved by US FDA, CE. Its throughput rate is 200 Tests/Hour and process

time is 15, 35 and 65 minutes. Available tests are Anemia, Allergy, Cardiovascular, Congenital Assays, Fertility, Infectious Disease, Metabolic Function, Oncology, Therapeutic Drug Monitoring, Thyroid. It is continuous, random,

and STAT access. It can clot and liquid level detection.

FEATURES

- Unique user interface software for enhanced operation
- Onboard refrigeration
- Automatic monitoring of reagents, supplies and waste
- Minimal attendance, easy access and limited maintenance
- Provides a loading capacity of up to 200 patient samples
- Reduces sample handling by allowing use of clinical chemistry instrument racks
- Allows continuous and immediate access to patient samples
- Real-time instrument monitoring via the Internet, 7 days a week, 24 hours a day
- Online QC management from any Internet-equipped computer
- Throughput of up to 200 tests/hour
- 24 resident assays
- Proprietary onboard dilution
- Automatic re-assay of out-of-range samples
- Reflex testing for additional clinical information
- Primary, secondary and microtube sampling
- LIS interface, including host query
- Remote-test ordering via LIS
- STAT capability
- Open architecture to interface with lab automation or workcell configurations via the SMS
- Clot detection
- Proprietary wash technique for high sensitivity
- Third-generation assays
- Extensive menu encompassing routine and esoteric assays, for faster clinical diagnostic information

- Reagents, controls, and consumables may be available.

Different types of assays:

1) LIAISON Measles and Mumps IgG Assays:

The LIAISON Measles and Mumps IgG Assays are based upon the chemiluminescent immunoassay. This assay is used to detect IgG antibodies to measles and mumps viruses in human serum. This helps in determination of serological status to measles and mumps virus. It gives first result in 35 minutes and throughput of 90 results/hour. These chemiluminescent immunoassays complete the MMRV IgG assay panel.

2) 25-hydroxy Vitamin D Assay:

Diazyme's 25-Hydroxy Vitamin D assay measures the true total 25-hydroxy vitamin D and the sum of both D3 + D2. It has a wide dynamic range with improved precision and eliminates time-consuming washing steps. This assay reduces testing time and cost. The test is user-friendly and can be run manually. Easily adapted for use on a wide range of fully automated microtiter plate readers, making it suitable for use in laboratories of all sizes and testing needs.

3) STA-StaclotdRVV Screen and Confirm assay for detecting lupus anticoagulants:

The FDA-cleared STA-StaclotdRVV Screen and Confirm are fully automated assays. It detects lupus anticoagulants (LA) in patient plasma by the diluted Russell viper venom method. Each reagent is barcoded for ease of use. The STA-StaclotdRVV Screen uses a reagent with a low phospholipid concentration; it will enhance its sensitivity and prolong the clotting time. The STA-StaclotdRVV Confirm uses a reagent with a high phospholipid concentration. This neutralizes the LA present in the plasma, which will shorten the clotting time. These tests are not affected by

contact factor deficiencies, factor VIII, and IX deficiencies, or other specific inhibitors, as well as by samples containing therapeutic levels of heparin. STA StaclotdRVV Screen and Confirm in combination with Staclot LA are complimentary in fulfilling the recommendations established by ISTH.

4) Ecarin Chromogenic Assay:

The Ecarin Chromogenic Assay (ECA) enhances the Ecarin Clotting Time (ECT). It is the reference method for determining direct thrombin inhibitors (DTIs) such as argatroban. For this many high-risk patients are required to minimize dangerous side effects.

5) BioPlex 2200 APLS IgG, IgM, and IgA Kits for diagnosis of antiphospholipid syndrome:

The BioPlex 2200 Antiphospholipid Syndrome (APLS) IgG, IgM, and IgA kits are the first fully-automated, random access multiplex flow immunoassays for the semi-quantitative detection of IgG, IgM, and IgA antibodies to cardiolipin (CL) and beta-2 glycoprotein I (β 2GPI). These kits help in the diagnosis of antiphospholipid syndrome (APS). These kits

consolidate six traditional single-analyte tests into one disease-state panel. The throughput of this assay is up to 200 tests/hour. These kits also offer results in 45 minutes. The BioPlex 2200 APLS IgG, IgM, and IgA help in autoimmune and infectious disease tests on the BioPlex 2200 system.

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