Analytical technologies and applications

EVALUATION OF THE FUJI DRI-CHEM NX700I CLINICAL CHEMISTRY ANALYZER

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BACKGROUND-AIM

The FUJI DRI-CHEM NX700i holds 28 colorimetric and 3 electrolyte test assays and analyzes up to five different samples simultaneously with 190 tests/hour (colorimetry + electrolytes). A STAT testing position is available. The colorimetric method slide is a multilayered slide composed of dry chemical ingredients needed for the reaction quantifying enzymes and substrates by colorimetric methods. The potentiometric method slide contains ion selective film electrodes for Na, K, and Cl. Calibration is done with QC cards except for CRP working with a calibrator. Each test needs only 10μL of sample except for CRP (5μL) and ISE (50μL for all 3 tests). Whereas the NX700i can only be used for serum or plasma samples the NX700 uses plasma filters for whole blood separation and can therefore be used in POCT settings.

METHODS

In this study the Fuji Dri-Chem NX700i was evaluated using serum samples. The parameters investigated were albumin (ALB), blood urea nitrogen (BUN), creatinine (CRE), total bilirubin (TBIL), aspartate aminotransferase (AST/GOT), Alanine Aminotransferase (ALT/GPT), γ-glutamyltransferase (GGT), C-reactive protein (CRP), lipase (LIP), triglycerides (TG) and ammonia (NH3). Interferences from hemolytic, lipemic, icteric or highly elevated total protein samples were excluded according to the manufacturers method specific declarations and studied separately. Method comparison was done by measuring 50 samples for each analyte at the same time on the NX700i and the Siemens Atellica CH analyzer. For each parameter inter- (controls, n=10) and intra-assay (patient samples, n=10) coefficients of variation (CV) were calculated for low, medium and high concentrations.

RESULTS

Inter-assay CVs (n=10) were 1.4 to 7.7% (Low), 1.1 to 5.5% (Medium) and 1.1 to 3.9% (High). Intra-assay CVs (n=10) were 1.2 to 4.1% (Low), 1.1 to 3.7% (Medium) and 0.8 to 3.3% (High). Method comparison (Passing Bablok Regression) of routine samples from hospital patients revealed good agreement of the two methods with correlation coefficients of r = 0.98 and higher except for LIP (0.83), NH3 (0.87) and Alb (0.93).

CONCLUSIONS

The FUJI DRI-CHEM NX700i shows good intra- and inter-assay precision with low CVs and excellent correlation with the Siemens Atellica CH analyzer.