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Evaluation of Colorimetric and Electrolyte Test Assays on the Fuji Dri-Chem NX700i Clinical Chemistry Analyzer

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Abstract:

Background The FUJI DRI-CHEM NX700i holds 28 colorimetric and 3 electrolyte test assays and analyzes up to 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. Calibration is done with QC cards except for CRP working with a calibrator. Each test needs 10 μ L of sample except for CRP (5 μ L) and ISE (50 μ L for all 3 tests). **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 (TBL), 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 1.1 to 7.7% (Low), 0.7 to 3.9% (Medium) and 0.8 to 5.5% (High). Intra-assay CVs (n=10) were <0.01 to 9.5% (Low), <0.01 to 3.7% (Medium) and 0.7 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). **Conclusion** The FUJI DRI-CHEM NX700i shows good intra- and inter-assay precision with low CVs and excellent correlation with the Siemens Atellica CH analyzer.

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