



Glucose Method Comparison of the Roche OPTI™ CCA (Critical Care Analyzer) E-Glu (Glucose) Cassette and the Beckman Coulter LX-20 (Laboratory Reference) Analyzer

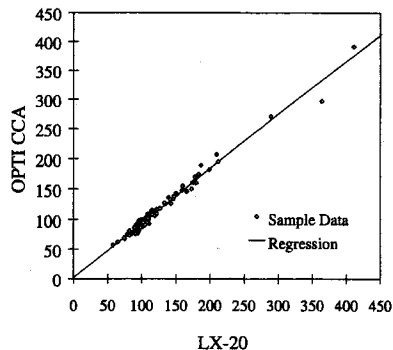
Joyce Bowers, MT (ASCP) SBB, Clinical Laboratories, Forsyth Medical Center (Winston-Salem, NC)
Nancy Greene, RN BSN, Roche Diagnostics Corporation (Indianapolis, IN)

Introduction: In order to ensure consistency of glucose results between Surgical Services and the core laboratory, we compared the glucose values on the Roche OPTI CCA E-Glu cassette (Roche Diagnostics Corporation, Roswell, GA) with the Beckman Coulter LX-20 (Beckman Coulter, Inc., Fullerton, CA)

Methods: Three (3) levels of OPTI Standard Reference Cassettes (electronic quality control) were performed at the beginning of this comparison, and every eight (8) hours of testing, thereafter, on the Roche OPTI CCA. Three levels (3) of liquid controls (Roche OPTI-check Plus) were also performed prior to the evaluation. Two (2) levels of liquid controls (BioRad Liquichek) were performed every eight (8) hours of testing on the Beckman Coulter LX-20. A total of one hundred and twenty six (n=126) patient samples were analyzed over a period of two (2) days. Patient samples were collected in a 10-mL gel separator tube containing liquid lithium heparin. Upon receipt of the sample in the laboratory, approximately 1 mL of whole blood was drawn into a syringe and analyzed on the Roche OPTI CCA. The remaining sample in the gel tube was spun at 3400 rpm for ten (10) minutes with the plasma being analyzed by the Beckman Coulter LX-20. The Roche OPTI CCA utilizes optical fluorescence detection methodology, and the Beckman Coulter LX-20 utilizes timed end-point methodology. Both methods are based on the principle of glucose oxidation.

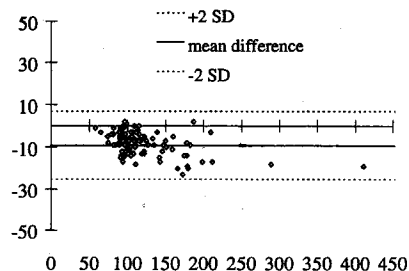
Results: All quality control testing results for both the Roche OPTI CCA and Beckman Coulter LX-20 analyzers were within the established acceptable ranges. Patient values ranged from 57 mg/dL to 411 mg/dL. Figure 1 shows the linear regression graph and statistical analysis. The correlation coefficient (r) value was 0.99116. Figure 2 displays the t-test. No significant difference was detected between the two analyzer methods.

Conclusion: A correlation of (> 0.95) exists between the Beckman Coulter LX-20 and the OPTI CCA glucose methods. A strong correlation coefficient value was demonstrated even when comparing plasma to whole blood results. Frequent monitoring of glucose values is essential for our patients undergoing coronary artery bypass graft surgery. The Roche OPTI CCA E-Glucose cassette provides rapid accurate results in our open-heart surgical setting.



number of pairs (n):	126
slope (m):	0.90956
regression coefficient (r2):	0.98239
correlation coefficient (r):	0.99116
std deviation (X):	47.000
min value (X):	58.0
max value (X):	411.0
y-intercept (b):	1.9460
y-intercept:	-7.0981
std error of y estimate:	6.464
std deviation (Y):	41.000
min value (Y):	57.0
max value (Y):	392

Figure 1



t-Test: Two-Sample Assuming Equal Variances

	LX 20	OPTI CCA	Bias
average	92.00	82.00	-9.18
1 SD	47.00	41.00	8.01
variance	2789	2348	
observations	126	126	
ypothesezed mean difference	0		
P(T<=t) two-tail	0.2018		
df	240		
P	0.05		
significant difference?	NO		

Figure 2