

HemataSTAT TECHNOLOGY

ABSTRACT - Morristown Memorial Hospital, Morristown, New Jersey

The Separation Technology (STI) HemataSTAT system for measurement of whole blood hematocrits was evaluated by a third party at the Morristown Memorial Hospital, Morristown New Jersey in May of 1988. This evaluation was a comparison of the STI angle technology to a reference NCCLS hematocrit centrifuge. Samples were taken from sixty-five patients and outliers were excluded. Measurements were taken from the middle as well as both ends of the angle formed by the red blood cell and plasma interface.

The study demonstrated that the observation at the middle of the RBC plasma interface provided the optimum point of measurement. Incomplete packing of the red blood cells is corrected by a fixed factor.

The results of the comparison of the STI angle technology to a reference NCCLS hematocrit centrifuge was excellent. There was a strong correlation ($r=0.9978$) between the HemataSTAT centrifuge and the NCCLS reference centrifuge. Precision was typically under a 1% CV. The short time of centrifugation and the quiet operation of the centrifuge were also notable.

STI CLINICAL STUDY – MORRISTOWN MEMORIAL HOSPITAL

NCCLS Reference HCT V.S. STI Angle Centrifuge HCT

May 1998

TABLE I

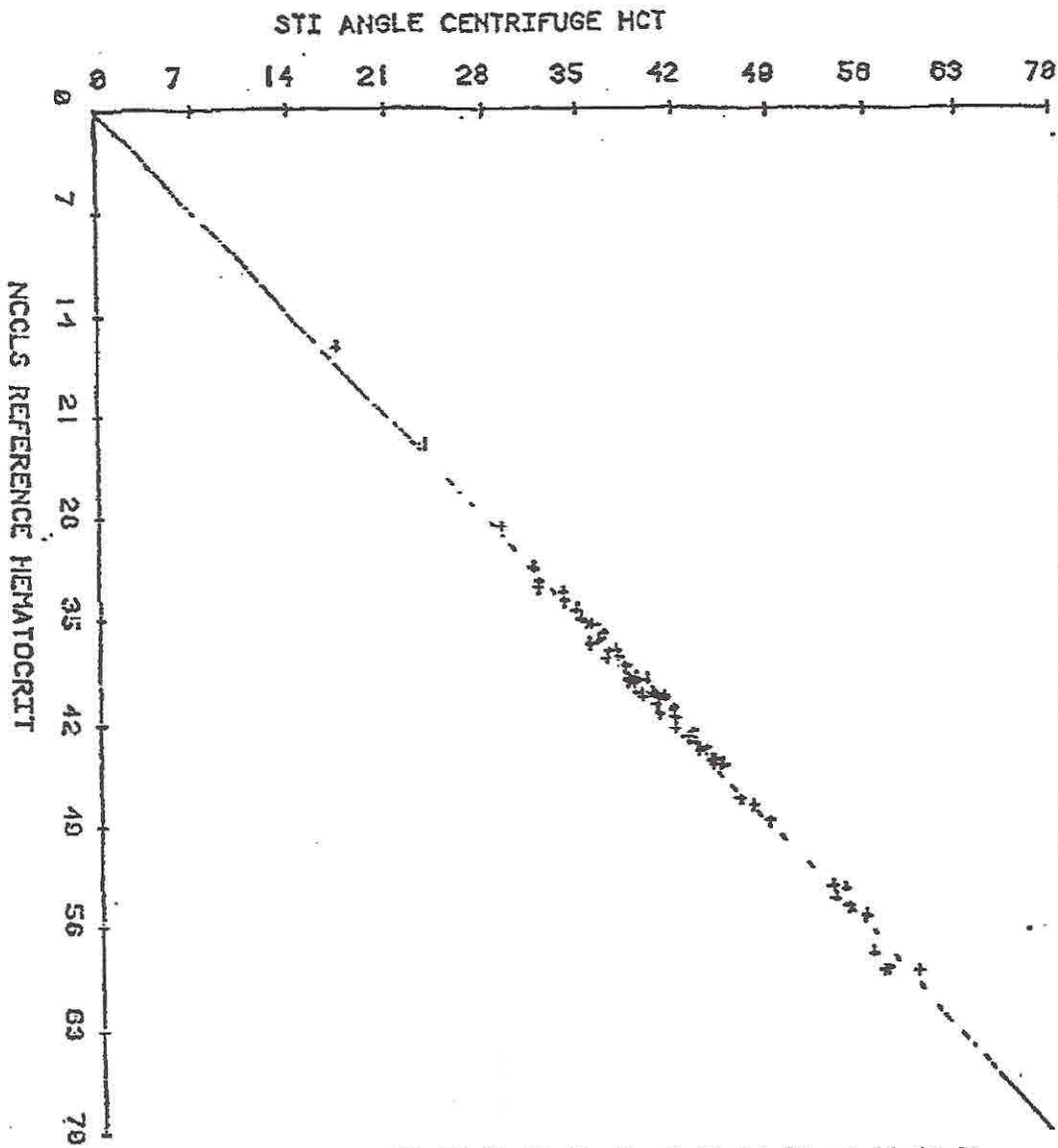
STI ANGLE CENTRIFUGE WITHIN RUN PRECISION: ALGORITHM CORRECTED RESULTS
One Minute

	$L_A/L_T * 0.920$	$L_B/L_T * 0.886$	$L_C/L_T * 0.852$
Sample No. 1			
\bar{x}	23.2	23.9	24.2
SD	0.54	0.54	0.51
% CV	2.31	2.26	2.09
Sample No. 2			
\bar{x}	34.8	35.3	35.4
SD	0.21	0.21	0.25
% CV	0.60	0.60	0.73
Sample No. 3			
\bar{x}	40.6	40.4	40.4
SD	0.34	0.31	0.22
% CV	0.83	0.78	0.55
Sample No. 4			
\bar{x}	53.6	53.2	52.7
SD	0.17	0.15	0.12
% CV	0.31	0.29	0.23

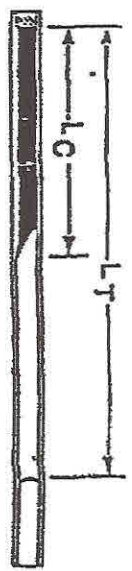
Plot 1

STI HCT CLINICAL STUDY - MORRISTOWN MEMORIAL HOSPITAL

NCCLS REFERENCE HEMATOCRIT V.S. STI ANGLE CENTRIFUGE HCT



$R = .9973738$
 SLOPE = .9838631
 INTERCEPT = .7124324
 TOTAL POINTS = 65
 POINTS ON PLOT = 65
 DATA PLOTTED : 05/11/86
 X MEAN = 41.40302
 Y MEAN = 41.52683
 S.D. OF X = 8.208888
 S.D. OF Y = 8.097408
 MAXIMUM X = 50.20769
 MINIMUM X = 16.27655
 MAXIMUM Y = 60.03458
 MINIMUM Y = 17.46726



Spin Time = 1 minute
 ALL STI results obtained
 with Digital Reader
 $STI\ HCT = 0.852\ L_c / L_r$

PLOT 2 Measured to MIDDLE of angle

ENTRY #	NCCLS	STI	STD	CV
1	33.88788	33.56742	0.227	0.672
2	38.34871	38.25109	0.069	0.180
3	39.22024	38.25541	0.682	1.761
4	41.44796	40.85953	0.416	1.011
5	33.02924	32.35369	0.478	1.461
6	39.19848	36.43724	0.538	1.387
7	37.80714	36.73380	0.759	2.036
8	39.38761	39.27423	0.080	0.204
9	40.24944	40.11937	0.092	0.229
10	39.05461	39.07311	0.013	0.033
11	16.27655	16.13879	0.097	0.601
12	35.11948	34.96670	0.108	0.308
13	32.62593	31.50075	0.796	2.481
14	28.77170	27.95642	0.576	2.032
15	35.43503	34.70972	0.513	1.462
16	39.31786	38.89091	0.302	0.772
17	31.66553	32.02864	0.257	0.806
18	36.63004	36.51122	0.084	0.230
19	37.22646	37.54564	0.226	0.604
20	36.81902	35.65637	0.822	2.269
21	37.37276	36.50832	0.611	1.655
22	36.18534	36.53511	0.247	0.680
23	31.55620	31.04052	0.365	1.165
24	44.58568	44.95178	0.259	0.578
25	39.24197	39.59363	0.249	0.631
26	44.88169	45.68168	0.566	1.249
27	44.55740	45.26448	0.500	1.113
28	43.12314	42.71860	0.286	0.666
29	42.73396	42.56784	0.117	0.275
30	40.01418	39.67686	0.230	0.609
31	40.30784	41.18905	0.623	1.529
32	47.20375	47.43829	0.166	0.350
33	40.21282	39.91452	0.211	0.526
34	33.34998	33.85367	0.356	1.060
35	35.51656	35.44418	0.051	0.144
36	44.83120	44.87894	0.034	0.075
37	42.53215	41.84570	0.485	1.151
38	43.89015	44.16131	0.192	0.436
39	44.01328	44.17361	0.113	0.257
40	43.49045	44.04094	0.389	0.889
41	40.34260	41.32479	0.695	1.701
42	48.78049	49.26429	0.342	0.698
43	40.32101	41.35875	0.734	1.797
44	40.06775	39.95771	0.078	0.194
45	44.98841	44.87218	0.082	0.183
46	40.16861	40.59628	0.302	0.749
47	40.91802	40.93240	0.010	0.025
48	34.44698	34.32602	0.086	0.249
49	41.79375	41.53869	0.180	0.433
50	41.26214	41.75604	0.349	0.841
51	37.74982	37.70710	0.030	0.080
52	23.11964	22.71691	0.285	1.243
53	41.18182	41.54931	0.260	0.628
54	40.29589	40.78570	0.346	0.854
55	47.63585	48.52831	0.631	1.312
56	54.19355	54.28515	0.065	0.119
57	53.39731	53.50130	0.074	0.138
58	59.02627	58.30466	0.510	0.870
59	55.55298	56.84950	0.210	0.376
60	53.59508	54.13265	0.390	0.708
61	58.02276	56.91993	0.780	1.357
62	54.77968	55.34605	0.400	0.727
63	59.13660	58.95001	0.132	0.223
64	59.20769	60.42051	0.858	1.434
65	55.34459	56.51386	0.827	1.478

Regression Output:

Constant	-0.91712
Std Err of Y Est	0.565602
R Squared	0.995612
R	0.997804
No. of Observations	65
Degrees of Freedom	63
X Coefficient(s)	1.021848
Std Err of Coef.	0.008546
X MEAN:	41.48383
Y MEAN:	41.47303
SD OF X:	8.27263
SD OF Y:	8.47187
MAX X:	59.20769
MAX Y:	60.42051
MIN X:	16.27655

