

Performance Comparison of the QBC STAR to the Sysmex K-1000 Impedance Analyzer and the Spun Microhematocrit

Study Design

190 venous blood specimens from surplus hospital samples and healthy volunteers in an industrial setting were analyzed on the QBC STAR Hematology System and the Sysmex K-1000 for the purpose of comparing STAR performance to an impedance-based hematology analyzer. Spun microhematocrits were also prepared for each specimen to provide the reference standard for hematocrit.

Summary of Results

The QBC STAR was challenged across a wide range of samples for all parameters. Correlation statistics for the QBC STAR versus Sysmex K-1000 comparison are detailed below in Table 1.

Table 1. QBC STAR vs. Sysmex K-1000

Parameter	Correlation Coefficient	Slope	Intercept	QBC STAR Mean	Sysmex K-1000 Mean	QBC STAR Range of Values	Sysmex K-1000 Range of Values
Hemoglobin	0.982	1.04	-0.059	11.3	10.9	7.3 - 16.9	7.5 - 16.3
WBCs	0.923	0.924	1.23	9.9	9.3	2.7 - 30.1	2.9 - 29.0
Granulocytes	0.925	0.909	0.912	7.0	6.7	1.6 - 21.8	1.2 - 21.1
Lymph/Monocytes	0.877	0.928	0.416	2.8	2.6	0.8 - 8.3	0.9 - 7.9
Platelets	0.912	0.819	36.3	225	231	81 - 644	61 - 765

Bias plots for Hemoglobin, WBC, Granulocyte, Lymph/Monocyte, and Platelet comparisons are provided below in Figures 1, 2, 3, 4, and 5, respectively.

Figure 1.

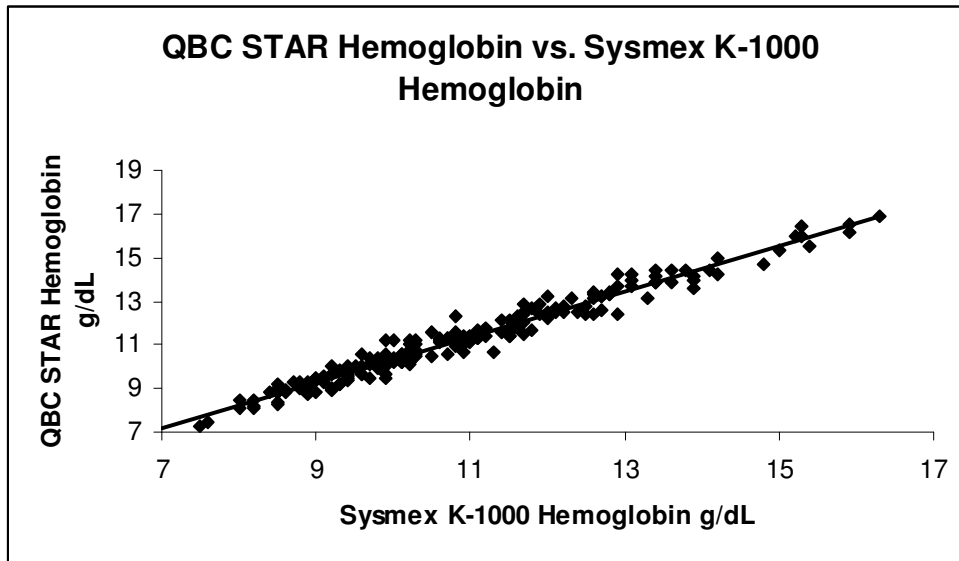


Figure 2.

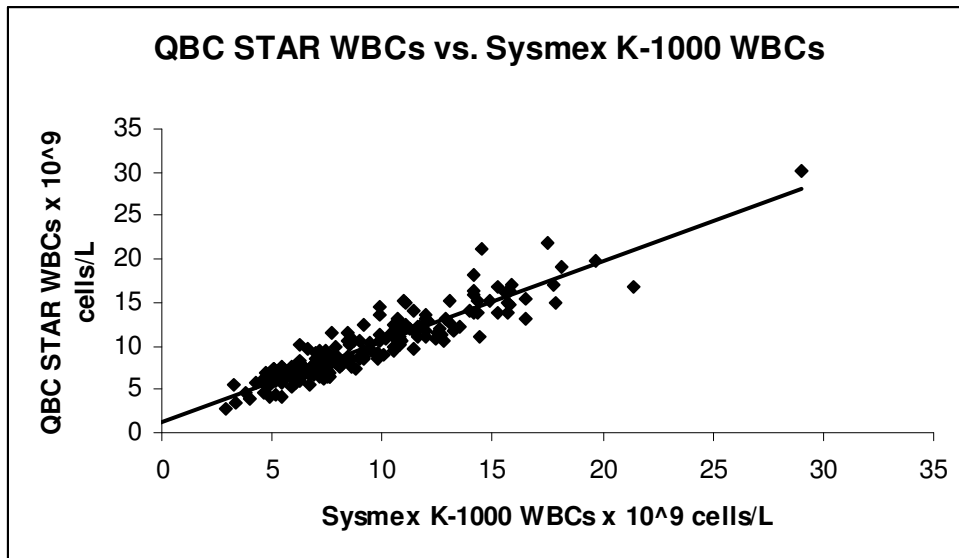


Figure 3.

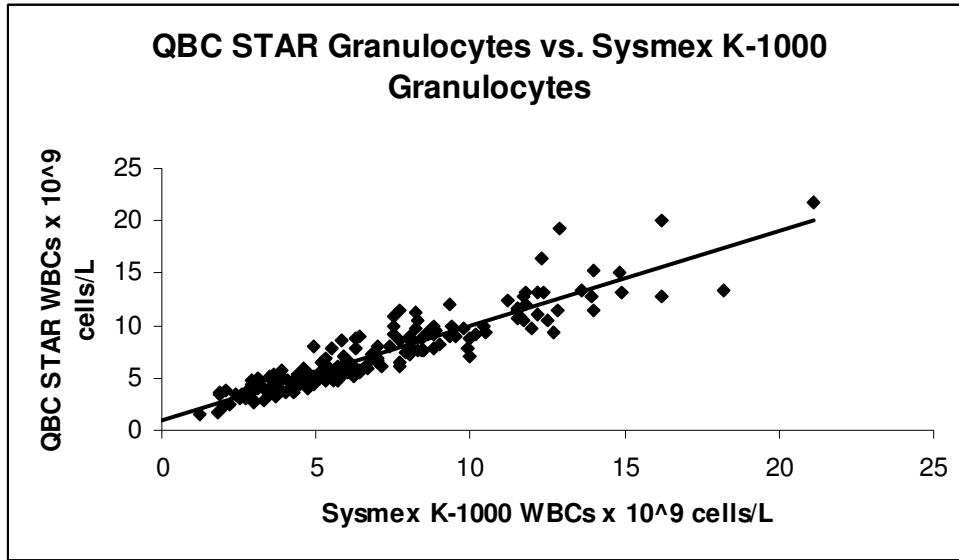


Figure 4.

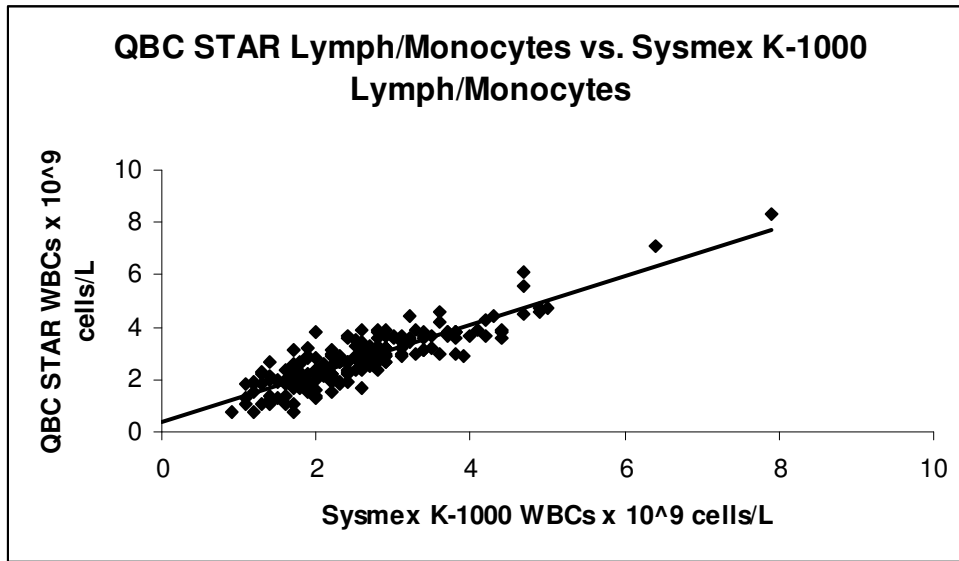
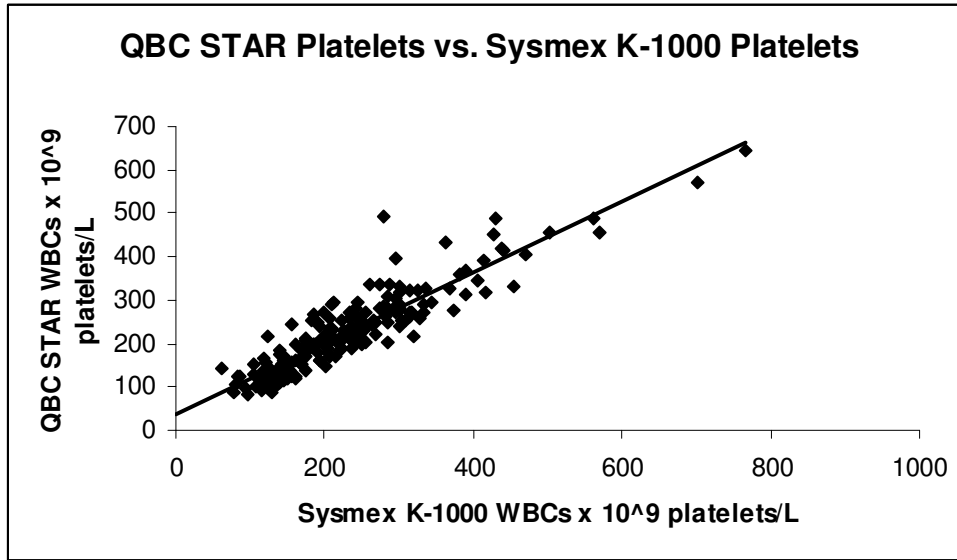


Figure5.



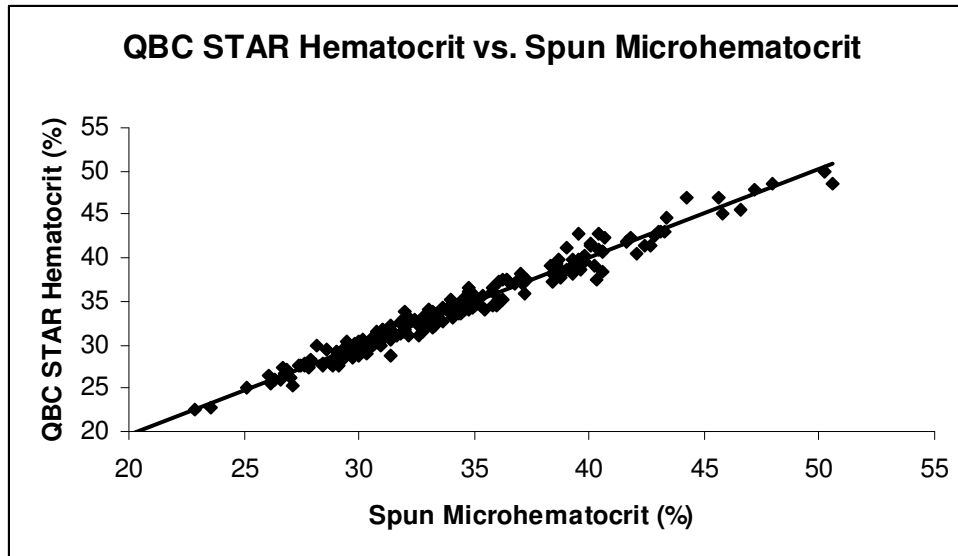
Samples ran on the QBC STAR and Sysmex K-1000 systems were also tested with the spun microhematocrit method. Correlation statistics for the QBC STAR vs. Spun Microhematocrit are detailed in Table 2 below.

Table 2

Parameter	Correlation Coefficient	Slope	Intercept	QBC STAR Mean	Spun Hematocrit Mean	QBC STAR Hct Range	Spun Hematocrit Range
Hematocrit	0.985	1.02	-0.795	34.2	34.3	22.5 - 49.9	22.9 - 50.6

The QBC STAR hematocrit bias plot data are shown in Figure 6.

Figure 6.



Conclusion

Altogether, the QBC STAR performance comparison study data indicate that the QBC STAR provides complete blood count results comparable to the reference methods for all parameters over a wide range of sample values.