

Comparison of results of DHT Portable Haemoglobinometer estimations with those using the Sysmex SE9000 Haematology Analyser.

The following trial was performed by Dr.T.Healy at Edinburgh Paediatric Hospital, UK in October 1997 on behalf of Developing Health Technology, UK.

The **DHT Hb-523 Portable Haemoglobinometer** from **Developing Health Technology** was tested alongside the Sysmex SE9000 instrument used routinely in the hospital laboratory.

Report prepared by Developing Health Technology using data and comments provided by Tom Healy

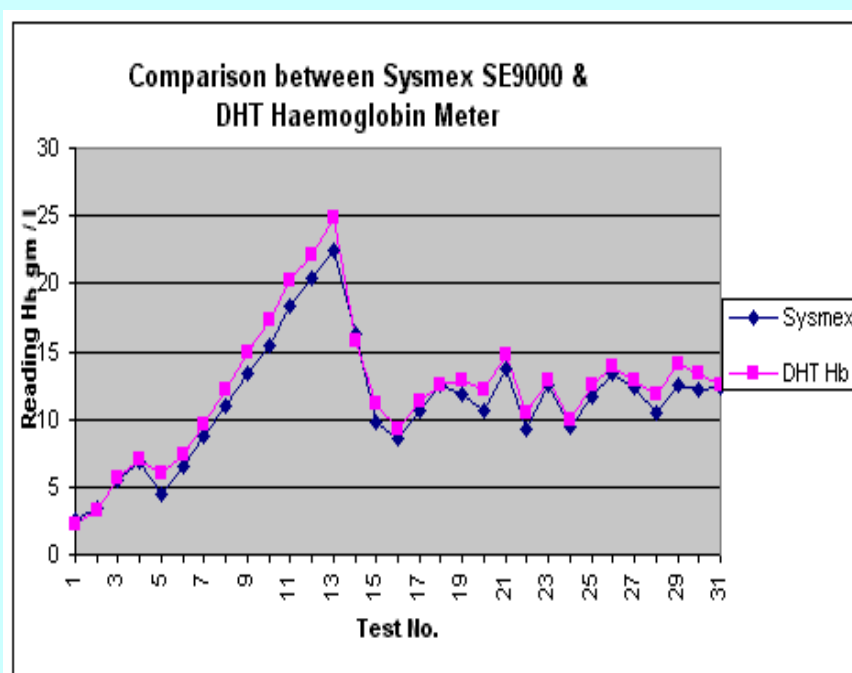
Whole Blood between 4 and 24 hours old, random selection, anticoagulated using EDTA and stored at room temperature before analysis.

Sample Sysmex DHT Hb-523

Temperature: 22° C

Reagents: 0.04% Ammonia solution.

Sample	Sysme x	DHT Hb-523
1	2.6	2.3
2	3.4	3.2
3	5.5	5.6
4	6.9	7.1
5	4.4	6
6	6.6	7.3
7	8.8	9.6
8	11	12.1
9	13.4	15
10	15.4	17.3
11	18.3	20.3
12	20.4	22.2
13	22.5	24.8
14	16.3	15.8
15	9.8	11.2
16	8.6	9.3
17	10.7	11.4
18	12.5	12.5
19	11.9	12.9
20	10.6	12.2
21	13.8	14.8
22	9.2	10.5
23	12.6	12.8
24	9.4	10
25	11.7	12.5
26	13.4	13.9
27	12.3	12.8
28	10.4	11.8
29	12.6	14.1
30	12.1	13.4
31	12.4	12.5
<u>Intercept</u>	<u>Slope</u>	<u>Correlation</u>
0.20302	1.1	0.991713



Analysed samples = 31

In comparing results, it should be borne in mind that the DHT Haemoglobinometer is specifically designed to detect various forms of Haemoglobin with [equal sensitivity](#). Forms other than Oxyhaemoglobin (HbO₂), though present in small amounts, thus contribute [proportionally](#) to the total Hb value. Conventional measurements at 540 nm with ammonia haemolysate will result in Methaemoglobin (Hi) and Sulphaemoglobin (SHb) being detected at about [half the sensitivity](#) of Oxyhaemoglobin (HbO₂) and thus contributing [less than the proportion present!](#)

Using a conventional ferricyanide-cyanide reagent method, [Sulphaemoglobin is not detected](#) and [erroneously low total Hb measurements will result](#) if high levels of SHb are present.

[Conclusion](#)

"The instrument offers good reproducibility, was found to correlate exceptionally well at low levels @ 3-7 (Anaemia levels) and the variance at 'normal' levels is not clinically significant. There appeared to be a larger variance in values from neonates due to transient HbF but this was not studied in depth, as the main use for Developing Health Technology would not be on neonates. For the higher levels found in polycythaemia it may be that a double dilution of the sample may suffice to bring values into a level where the correlation is acceptable."

This was a simple comparison test between the two instruments; no suggestion that the Sysmex is more accurate is made. Ideally the two instruments would be compared against accurate standards or against results obtained using a spectrophotometer.

As our major interest is the requirements of developing countries, our conclusion is based on what is suitable for their needs.

There has long been a need in developing countries for an accurate, simple to use device at a reasonable initial cost and zero or negligible ongoing consumable costs. We are impressed with the ruggedness, accuracy and ease of use of this DHT Hb instrument. The lack of expensive or difficult to obtain consumables is a major benefit. The instrument is self-powered by supplied AA alkaline batteries, with an expected life of five years or about one million tests, although a mains adaptor is also available.

[The DHT Haemoglobinometer offers vastly superior accuracy and reproducibility over visual comparison type instruments, yet it combines simplicity of use with low initial and ongoing cost.](#)