Comparison of the HemoCue Glucose 201 DM RT system with the Vitros 5.1

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Background and Aim
Worldwide prevalence of diabetes and cardiovascular disease is increasing extensively [1]. Currently used diagnostic criteria of diabetes is depending on glucose measurements after an overnight fast and after oral glucose loading [2]. These measurements should ideally be performed immediately after collection by near patient testing with high accuracy and results rapidly available [2].

HemoCue Glucose 201 DM RT system is a point of care system developed for quantitative determination of glucose in whole blood supplementing the clinical evidence in the diagnosis and treatment of patients with diabetes. The HemoCue Glucose 201 DM RT is a further development of earlier HemoCue glucose system, but with room temperature stable cuvettes and an extended measuring range. The system has data management functions ideal for decentralized testing and is factory calibrated and needs no further calibration.

The objective of this study was to evaluate the performance of the HemoCue Glucose 201 DM RT system, using the laboratory method Vitros 5.1 as a comparison. The HemoCue Glucose 201 DM RT Analyzer with blood plasma conversion multiplies the measured whole blood glucose value by a factor of 1.11 and displays a plasma equivalent glucose result [3].

Materials and Methods
All blood samples entering the study were venous left over blood samples from the routine sampling procedure at the hospital, collected in 5 mL glass vacutainer tubes (Becton, Dickinson and Company), containing the antityclocytic sodium fluoride.

Results
57 samples were analyzed in duplicates on both the HemoCue Glucose 201 DM RT system and the comparative glucose method. The analysis on HemoCue Glucose 201 DM RT were performed with whole blood, then plasma was separated by centrifugation and analyzed on the Vitros 5.1. To eliminate the effect of glycolysis, the analysis on both methods were performed within the hour.

Glucose values obtained with the HemoCue Glucose 201 DM RT system showed good agreement to glucose measured with the Vitros 5.1. Linear regression analysis between the results produced the regression line y = 1.012x + 0.207, R = 0.986 (Figure 1).

Discussion
In this study we have compared the HemoCue Glucose 201 DM RT system to the Vitros 5.1 that is a frequently used and well accepted laboratory instrument for accurate plasma glucose determination in healthcare settings. There is a good agreement between HemoCue Glucose 201 DM RT and Vitros 5.1 when measuring glucose over a wide measuring range. This indicates that the methods can be used interchangeably for clinical purposes within the healthcare settings. A point of care system that combines laboratory quality with data management functions is often requested today. By providing a direct transfer of the results to the hospital’s laboratory information system or medical record, the HemoCue Glucose DM RT system reduces the risks of pre- and post-analytical errors and improves the patient treatment.

The new cuvette design of the RT system makes it easy and comfortable to fill. In this evaluation, we also got use of the extended measuring range, pointing out the clinical advantage of a broader measuring range.

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References: