

GlucoTrol-WB

a highly commutable whole blood quality control for glucose point-of-care testing

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Problem

Glucose point-of-care testing (POCT) is mainly performed on fresh whole blood. In whole blood samples, the glucose concentration rapidly decreases due to glycolysis. In Quality Controls (QC's) currently used the loss of glucose is prevented in several ways: addition of glycolysis inhibitors, fixation of the red blood cells, use of a plasma/serum based matrix or even an aqueous matrix.

A disadvantage of these matrix alterations is a noncommutability of the QC's with different POCT devices. Our aim was to develop a glucose QC compatible with all glucose POCT devices, with minimal matrix effects: GlucoTrol-WB (Whole Blood).

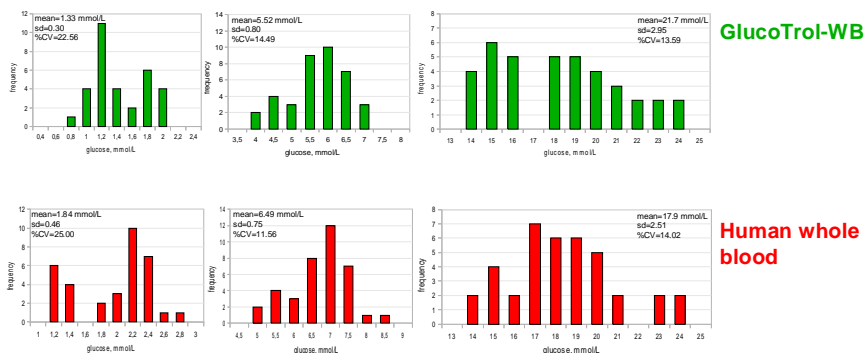
Solution

GlucoTrol-WB was produced by separation of the blood cells from the blood plasma. The plasma was spiked with glucose. The cell fraction and plasma fraction were separately stored in a two compartment container at 2-8 °C. Prior to use, the cells were completely mixed with the plasma to reconstitute a whole blood sample (patent pending).



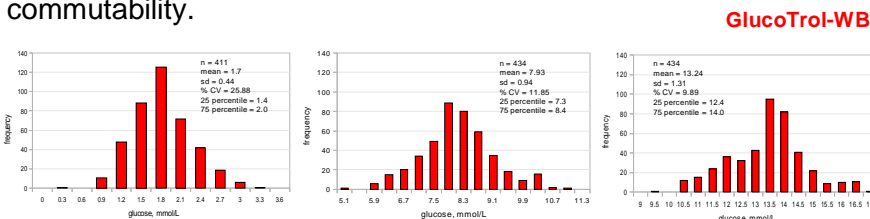
Performance of GlucoTrol-WB

3 levels of GlucoTrol-WB were tested on 19 different glucose POCT devices at Eurotrol and compared to fresh human EDTA blood.



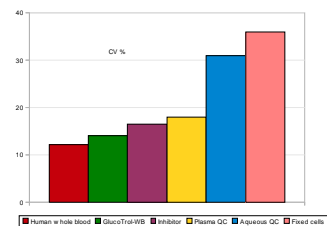
On all tested levels the imprecision (%CV) of GlucoTrol-WB is comparable with the imprecision of human whole blood.

GlucoTrol-WB was also tested on 30 different POCT devices in several laboratories. The results show a low imprecision and a high commutability.



Comparison to other glucose QCs

Of all tested QC's GlucoTrol-WB has the lowest imprecision.



Joint analysis of results of different QCs (normal level) over 22 Glucose POCT devices

Advantages of GlucoTrol-WB

- compatible with all POCT devices
- no interfering additives
- long shelf life

Stability

The shelf life of GlucoTrol-WB is at least 8 weeks at 2-8 °C. During this shelf life the reconstituted blood shows no signs of deterioration. After reconstitution GlucoTrol-WB can be used for 5 hours.

Conclusions

GlucoTrol-WB:

- performance comparable to fresh human whole blood
- compatible with all glucose POCT devices
- low imprecision
- high commutability


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