ORIGINAL ARTICLE

Whole Blood Interleukin-8 Concentrations in Capillary and Cord Blood of Neonates for the Diagnosis of Systemic Inflammatory States

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SUMMARY

An assay is described for the determination of interleukin 8 (IL-8) in whole blood lysate instead of plasma or serum. EDTA-anticoagulated umbilical cord blood or capillary blood was added to a detergent-containing lysing reagent. This sample was used directly for determination of IL-8 using the Immulite® IL-8 assay kit (DPC, Bad Nauheim, Germany) and the Immulite® Analyzer. Linearity was confirmed for cord blood as well as for venous blood, at a whole blood to lysing agent ratio from 1:20 to 1:1. IL-8 was stable in whole blood hemolysate at 4°C for at least 3 days; thereafter, concentrations decreased remarkably to 32% of the initial concentration after 8 days. Storage of whole blood prior to hemolysis led to increases in IL-8 concentrations of up to 4fold the original values. The intra-assay CV was 3.4% (at 234 ng/l) and 7.4% (at 1080 ng/l) using hemolysate samples. Inter-assay CVs of 13.3% (at 108 ng/l) and 11.7% (at 506 ng/l) were found using control material. Concentrations of IL-8 in whole blood were significantly higher than in the corresponding plasma. In 70% of 135 apparently healthy neonates’ cord blood samples, plasma IL-8 concentrations were below the detection limit of the assay (5 ng/l), whereas a range of 69 - 3150 ng/l IL-8 (median, 266 ng/l) was found in the hemolysate samples of these neonates. A preliminary reference range for IL-8 in whole blood may be set at 132 to 820 ng/l (5th and 95th percentile). In 78 neonates, IL-8 concentrations in hemolysate from capillary blood ranged from 120 ng/l to 2000 ng/l (median, 416 ng/l). The fact that concentrations of IL-8 can be determined using only a very small sample volume (10 µl of whole blood) makes the assay format especially suitable for use in neonatal intensive care. (Clin. Lab. 2002;48:497-503)