Adaptation of a Non-Albumin-Bound Bilirubin test in the serum of newborns to the DxC 800® Beckman Coulter

INTRODUCTION

The unbound bilirubin (UBB) concentration is probably the most critical parameter in establishing the risk for bilirubin encephalopathy. The parameter takes into consideration 3 biological risk factors for kernicterus: non-hemolytic hyperbilirubinemia, hyperbilirubinemia and complications of birth (hypothermia, asphyxia). It also identifies risk situations which cannot be detected with individual testing of either bilirubin or albumin.

METHOD

Validation of this transfer was conducted by reducing the volumes of reagents from 25 to 6 µl. We have chosen a CX4-CE decreasing mode as reaction type with a primary wavelength at 470 nm and a secondary wavelength at 650 nm. We have adapted the parameters of reaction to calculate the unbound bilirubin in serum with sample + buffer + reagent. The first reading after peroxidase addition is 10 and the reading after 30 s.

RESULT (1)

UBB testing by peroxidase method – mechanism

The unbound bilirubin (UBB) concentration was calculated through knowing the peroxidase reaction kinetic.

RESULT (2)

Table 1: method parameters of reading

\[ \text{UBB concentration (µg/dl)} = \frac{\text{OD} \times \text{Vsample} \times \text{K} \times \text{Cub}}{\text{Vperoxidase}} \]

RESULT (3)

Validation of this transfer was conducted by reducing the volumes of reagents from 25 to 6 µl. The transfer of the UBB assay to open biochemistry systems, the CX4-CE® and the DxC 800® Beckman Coulter.

RESULT (4)

Table 2: analytical performances

\[ \text{UBB concentration (µg/dl)} = \frac{\text{OD} \times \text{Vsample} \times \text{K} \times \text{Cub}}{\text{Vperoxidase}} \]

REFERENCES

