

Correction of Haemolytic Interference on Potassium Measurement in Pooled Serum

A Ajantha^{1#}, K Kandeepan² and V Kesavan³

¹Unit of Allied Health Sciences, Faculty of Medicine, University of Jaffna, Sri Lanka

²Department of Biochemistry, Faculty of Medicine, University of Jaffna, Sri Lanka

³Teaching Hospital Jaffna, Sri Lanka

#ajantha1890@gmail.com

This study was aimed at evaluating and correcting the haemolytic interference on potassium measurement in pooled serum. Blood samples were collected from 20 healthy individuals. Serum was separated to prepare pooled-serum. Baseline concentration of haemoglobin and potassium was measured in the pooled-serum initially. Five different adjusted concentrations (2.5, 3.5, 4.5, 5.5 and 6.5 mmol/L) of potassium containing serum were prepared by adding potassium or de-ionized water. Each serum sample was aliquoted into 10. Haemolysate was prepared (134 g/dL). Then, nine different haemoglobin concentrations (5, 10, 15, 20, 25, 30, 35, 40 and 45 g/L) were prepared. Those different concentrations of haemolysates were then added into each adjusted potassium concentrated serum samples. No haemolysate was added to the first aliquate (baseline). Concentrations of potassium were measured by FP910 Flame photometer. The potassium concentrations (2.5, 3.5 & 4.5 nmol/L) of haemolyzed samples were significantly higher than baseline (non-haemolysed serum) ($p < 0.05$). However, the potassium concentrations of 5.5 and 6.5 mmol/L have shown a significant difference from base line in all the haemolyzed samples except 5 g/L of haemolysate. Correction factors were obtained as 0.39 ± 0.046 , 0.35 ± 0.034 , 0.33 ± 0.034 , 0.26 ± 0.025 and 0.20 ± 0.015 mmol/L for adjusted potassium concentrations of 2.5, 3.5, 4.5, 5.5 and 6.5 mmol/L respectively. There was a strong positive correlation between potassium concentration and haemolysis ($r > 0.980$, $p < 0.001$). There is a significant interference of haemolysis on potassium measurement. The corrections are useful to avoid falsely high values, and they help to avoid unnecessary repetition of samples.

Keywords: Potassium, Haemolysate, Haemolysis, Correction factor