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Effect of coconut water on osmotic fragility of sickle red cells

Ozimede Fortune Shuaibu, Igwilo V O and **Ajayi O I**
University of Benin, Nigeria

The osmotic fragility of red cells in hypotonic solutions is well understood while there are few or no information on the response to isotonic solutions with reversed sodium and potassium ion contents. We studied the effects of coconut water on the osmotic fragility (OFT) of sickled red cells (HBS) using hemoglobin genotypes (AA, AS) as controls with a view to highlight their responses to hypotonic solutions after exposure to an isotonic solution with very high potassium ion. A total of 30 blood samples comprising of HBSS (10), HBAS (10) and HBAA (10) were collected for the osmotic fragility experiments before and after treatments with equal volume of a high potassium medium (*Cocos nucifera* water). We recorded the absorbance of the mixture with a standard spectrophotometer at 540 nm. The average values recorded were plotted against the different concentration of NaCl used. All the samples treated with *Cocos nucifera* water have significantly reduced osmotic fragility ($P<0.05$, respectively) irrespective of their hemoglobin genotypes. We conclude that blood samples treated with high potassium medium resists osmotic lysis as much as possible. We hypothesize therefore *Cocos nucifera* water may reduce the tendency of sickle red cells to osmotic pressure lysis and possibly prolong the red cell's life span.

fortuneozimede@gmail.com