

In Vitro Effect of Temperature and Cobalt Chloride Treatment on Human Red Blood Cells' Morphology and Indices

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Changes of erythrocyte morphology induced by exposure of blood to cobalt chloride (CoCl₂) and/or various degrees of temperature are poorly studied. The aim of the study was to investigate the *in vitro* effect of CoCl₂ on erythrocyte morphology and indices of red blood cell suspensions after incubation at different temperatures. Human erythrocyte (RBC) suspensions were treated with 50 μM or 500 μM CoCl₂ and incubated for one hour at 4 °C, room temperature and 40 °C. After incubation the morphological changes were studied. Morphological studies showed RBC aggregates at 4 °C while elyptocytes were mainly observed at 40 °C. Thermal treatment induced anisocytosis leading to increased RDW and decreased MCV. The results indicate that both CoCl₂ and temperature affect erythrocyte morphology and indices of RBC suspensions possibly by inducing structural, biomechanical and biochemical changes in the erythrocyte membrane.

Key words: RBC suspensions, *in vitro* treatment, cobalt chloride, erythrocyte morphology, temperature incubation.