B.N.Bandokar College of Science, Thane

Zoology – II

Haematology

By Dr N.N. Patil

Haemolysis

The disruption of RBC with the escape of haemoglobin from corpuscles to plasma is called as **Haemolysis.**

When RBCs are placed in hypotonic solution, water enters the cells, they gradually swell up, become spherical and ultimately burst.Hb comes out in plasma. This phenomenon is called as **haemolysis or lacking of blood or fragility of RBC**.

For fragility determination, blood sample is diluted two hundred times in series of red cell counting pipettes using hypotonic salt solution of gradually decreasing strength.After half an hour, the RBC in each pipette are counted and number is compared with cell count done in the blood sample with normal saline.Normally haemolysis starts at 0.48% and is completed at 0.33% of NaCl solution.

RBCs in venous blood show increased fragility than in arterial blood.

In acidosis i.e.in acidic pH of blood fragility of blood increases.

In **laboratory** Blood may be haemolysed in following ways,

1) **By adding fat solvents** like ether, chloroform,benzene etc.These solvents dissolve the fatty red cell membrane causing haemolysis.

2) **By causing osmotic disturbance**: Addition of distilled water or hypotonic salt solution increases the cell volume by endosmosis and finally causes haemolysis
3) **By disturbing the surface tension of RBC**: Addition of bile salts or saponin increases the surface tension of RBC leading to haemolysis.
4) **Physical Methods** : Physical methods like alternate freezing and thawing of blood breakdown the RBC
5) **Mechnical Methods** : Mechanical methods like vigorous stirring and shaking lead to haemolysis.
6) **Addition of incompatible blood** : Addition of incompatible blood causes agglutination of RBCs leading to haemolysis.
7) **Haemolysins** : Addition of bacterial haemolysins causes haemolysis.
8) **Addition of snake venom i**.e. viper venom causes haemolysis.
9) **Addition of Drugs:** Addition of drugs like quinine, Phenacetin,nitrates,chloratescause haemolsis of blood.

In Human body under various anaemic condition RBCs become fragile and get haemolysed.

After haemolysis , Hb is released in to blood and break down into Haem and globin. From globin amino acids are separated and reused .Iron is separated and stored in various forms and used in formation of new Hb. Rest is converted into bilirubin which is oxidized to biliveridin.