INTRODUCTION AND AIM OF WORK

Cellular deformability defined as the combination of cellular properties that regulates the cell's ability to traverse the microvasculature and splenic sinuses. Reduction of cellular deformability leads to reduced red cell survival (Mohandas et al., 1979).

The three major cellular factors that regulate the cell's ability to deform are :

1) The geometry of the cell, including the ratio of cell surface to cell volume.
2) The viscosity of the intracellular milieu.
3) Viscoelastic and viscoplastic properties of the membrane (Mohandas et al., 1979).

A number of membrane associated enzymes play an important role in maintaining these cellular properties especially ATPase and protein kinase (Mohandas et al., 1979).

Thalassaemia syndromes are the most prevalent type of chronic haemolytic anaemia in Egypt in which the R.B.Cs.

deformability is diminished (Vasselon et al., 1981).

The membrane contains considerable amounts of cholesterol which therefore has important control on lipid fluidity (Rice & Chapman, 1981).

The deformability and shape of the erythrocyte depends on the metabolic state of red cell, if the red cells are depleted of ATP, the cells become rigid and echinocytic also calcium accumulation results. Increased calcium concentration modifies the membrane viscoelasticity and decrease the red cell deformability (Rice and Chapman, 1981) and red cell survival (Mohandas et al., 1979).

The aim of this work is to study the red cell membrane lipids (phospholipids, triglycerides and cholesterol), adenosine triphosphate (ATP) level, adenosine triphosphatase (ATPase) and protein kinase activities in the thalassaemic red cells. Moreover plasma Ca^{++} and intracorpascular Ca^{++} and compare the results with normal red cells to find out any possible deviation from normal that might account for the rapid lysis of the thalassaemic R.B.Cs.