

Chapter-4

OBJECTIVE

The development of Diabetes Mellitus is associated with a myriad of risk factors. Among them, family history is considered a significant factor. Individuals with positive family history of disease have a greater risk of developing type 2 diabetes. This is in contrast to individuals with negative family history.

Free radicals and oxidative stress are the most studied factors involved in progression and development of diabetes. This is attested by a number of literature reports that show presence of oxidative stress in first-degree relatives of type 1 diabetes patients. In contrast to this, very little work has been done to suggest any relationship between oxidative stress and family history of patients with type 2 diabetes. Hence, further studies are required to better understand the relationship between oxidative stress and family history of type 2 diabetic patients.

The focus of this thesis is to identify the presence of oxidative stress and study its role in influencing the homeostasis before the development of clinical conditions in families of type 2 diabetic patients. This study may provide us with a biochemical marker to identify subjects susceptible to type 2 diabetes. Moreover, we believe that this study may enable us to better understand the relationship between oxidative stress and its role in development of type 2 diabetes.

The present work will entail the detailed study of the following biochemical parameter in the test subjects:

1. Total Plasma Antioxidant capacity in terms of FRAP values.
2. Erythrocytes Reduced Glutathione (GSH) content.
3. L-cysteine influx in erythrocytes
4. Erythrocyte Malondialdehyde (MDA) content
5. Superoxide Dismutase (SOD) activity in plasma
6. Catalase (CAT) activity in plasma
7. Plasma Nitric Oxide level
8. Plasma membrane redox status (PMRS)
9. AFR Reductase Activity
10. Sodium Hydrogen Antiport (Na/H) activity