## Contents

1. Introduction	1-10
1.1. Brief description about Heart	
1.1.1. Covering of Heart	1
1.1.2. Heart Chambers and Valves	1-2
1.2. Circulatory pathway	3
<b>1.3.</b> Complications with the Heart:	4-5
1.4. Types of Cardiovascular Disease	5-10
1.4.1. Abnormal Heart Rhythms	5
1.4.2. Atrial Fibrillation	5-6
1.4.3. Coronary Artery Disease (CAD)	6
1.4.4. Heart Failure	6-7
1.4.5. Heart Attack	7
1.4.6. Heart Valve Disease	7-8
1.4.7. Congenital Heart Disease	8
1.4.8. Angina	8
1.4.9. Cardiomyopathy	8-9
1.4.10. Aorta disease	9
1.4.11. Stroke	9
1.4.12. Types of CAD and CHD	10
2. Review and Literatures:	11-33
2.1. Epidemiology of the Diseases	12
2.2. Events in Atherosclerosis	19

3. Objectives:	34
4. Methods and Materials:	(35-45)
4.1. Ethical clearance	35
4.2. Experimental Design	35
4.2.1 Animal model	35
4.2.2 On Human blood sample	35
4.3. Chemicals Used:	38-39
4.4. Estimation of oxidative stress marker malondialdehyde (MDA)	39
4.5. Estimation of antioxidant component Non Protein Soluble Thiol (NPSH)	39
4.6. Assay of Superoxide Dismutase (SOD) Activity by gel-zymography	40
4.7. Experimental Animals:	38
4.8. High lipid and high fructose diet:	40-41
4.9. Catalase activity assay by gel-zymography:	42
4.10. Biochemical Parameter Assay:	
4.9.1. Inflammatory and risk factors Estimation	42
4.9.2. Metabolic hormone T3, T4, TSH assay by ELISA method	42
4.9.3. Cardiac marker hs-CRP determination by ELISA	42
4.9.4. ELISA assay procedure	43
4.11. Anthropometric measurements	43-44
4.12. Preparation of neutrophil solution from human blood sample	44
4.12.1. Determination of NF- $\alpha$ and IL-6 in neutrophil by ELISA method	44-45
4.12.2. Preparation of dermcidin (DCN-2)	45
4.12.3. Western blot of TNF- $\alpha$ in neutrophil solution in the presence of dercidin	45

4.12.4. Identification of dermicidin by immunoblot and its quantitation by ELISA in the cell free plasma of both Type-1 Diabetes normal subjects	45-46
4.12.5. Assay of nitric oxide in the cell free plasma (CFP) of both normal and T1DM patients	46
4.12.6. Determination of plasma insulin levels in both T1DM and normal subjects by ELISA	47
4.12.7. Determination of NO synthesis in dermcidin induced neutrophils	47
5. Result:	48-61
5.1. Effect of DCN-2 in the synthesis of TNF- $\alpha$ and IL-6 in normal neutrophils	55
5.2. Plasma level of dermcidin in type I diabetes mellitus (T1DM) subjects	57
5.3. Plasma level of C-reactive protein (CRP) in both T1DM and normal subject	58
5.4. Plasma level of malondialdehyde (MDA) in both T1DM and normal subject	59
5.5. Plasma level of non-protein soluble thiol (NPSH) in both normal & T1DM subject	59
5.6. Effect of dermcidin isoform-2 in the synthesis of TNF- $\alpha$ in liver cell	59
5.7. Role of estriol to reduce the level of TNF- $\alpha$ and IL-6 in neutrophils from AIHD	59-60
5.8. Correlation between plasma dermcidin level with plasma NO and insulin levels in hyperglycemic and normoglycemic subjects	60
5.9. Effect of DCN-2 in the estriol induced NO production in normal neutrophils	61
6. Discussion:	62-89
7. Conclusion	90
8. Summary	91-94
7. References:	95-121