

CONTENTS

	Page
ACKNOWLEDGEMENT	i
ABSTRACT	ii
CONTENTS	iii
LIST OF FIGURES	vii
LIST OF TABLES	x

CHAPTER ONE

1.0 NASOPHARYNGEAL CARCINOMA	1
1.1 CLINICAL SYMPTOMS OF NPC	2
1.2 CLASSIFICATIONS OF NPC	3
1.3 GEOGRAPHICAL AND RACE DISTRIBUTION OF NPC	6
1.4 ETIOLOGICAL FACTORS TO NPC	9
1.4.1 Genetic	9
1.4.2 Environmental Cofactors	13
1.5 EPSTEIN-BARR VIRUS	16
1.6 EPSTEIN-BARR VIRUS AND GENOME STRUCTURE	18
1.7 EBV TRANSMISSION AND STAGES OF INFECTION	22
1.7.1 Transmission	22
1.7.2 Infection	22
1.8 EPSTEIN-BARR VIRUS ANTIGENS	25

1.8.1	Epstein-Barr Virus Nuclear Antigens (EBNAs)	26
1.8.2	Viral Capsid Antigen (VCA)	30
1.8.3	BZLF1 Protein, ZEBRA	31
1.8.4	Early Antigen (EA)	33
1.9	EBV SEROLOGY	35
1.10	IMMUNOGENIC EPITOPE ANALYSIS BY PEPTIDE SYNTHESIS	38
1.11	ANTIGENIC EPITOPE AND PROTEIN SECONDARY STRUCTURE PREDICTIONS	44

CHAPTER TWO

2.0	MATERIALS AND METHODS	47
2.1	PROTEINS AND PEPTIDES	47
2.1.1	Recombinant proteins	47
2.1.2	Synthetic Peptides	48
2.2	SERUM SAMPLES	49
2.2.1	NPC Sera	49
2.2.2	Control Sera	49
2.2.3	Suspect NPC Sera	49
2.2.4	Immunoglobulin A Anti VCA (IgA-VCA) And IgG Anti EA (IgG-EA) Titers	50
2.3	PROTEIN HYDROPATHY PLOTS AND SECONDARY STRUCTURE PREDICTIONS	53
2.4	MULTIPIN PEPTIDE SYNTHESIS	54
2.4.1	Storage Of Multipin Peptide Synthesis Kit	54
2.4.2	Reaction Tray Numbering System And Pins Holder	54
2.4.3	Synthesis Procedures	57

2.5	ENZYME-LINKED IMMUNOSORBENT ASSAY (ELISA)	62
2.5.1	Recombinant Proteins As Antigens In ELISA	62
2.5.2	PEPSCAN Using Enzyme-Linked Immunosorbent Assay	63
 CHAPTER THREE		
3.0	RESULTS	67
3.1	DETECTION OF IgA ANTIBODIES TO EBV RECOMBINANT PROTEINS	67
3.1.a.(i)	IgA-p54 (Early Antigen)	68
3.1.a.(ii)	IgA-p138 (Early Antigen)	68
3.1.a.(iii)	IgA-p23 (viral capsid antigen)	68
3.1.b.(i)	IgA Analysis In Suspect NPC Serum Samples	69
3.1.b.(ii)	IgA Analysis In Follow-up NPC Sera, Pre- And Post- therapy	70
3.2	DETECTION OF IgG ANTIBODIES TO EBV RECOMBINANT PROTEIN	80
3.2.a.(i)	IgG-p54 (Early Antigen)	80
3.2.a.(ii)	IgG-p138 (Early Antigen)	81
3.2.a.(iii)	IgG-p23 (Viral Capsid Antigen)	81
3.2.B.(i)	IgG Analysis In Suspect NPC Serum Samples	87
3.2.B.(ii)	IgG Analysis In Follow-up NPC Sera, Pre- And Post- therapy	87
3.3	DETECTION OF IgM ANTIBODIES TO EBV RECOMBINANT PROTEINS	88
3.4	MULTIPIN PEPTIDE SYNTHESIS	91
3.5	HYDROPATHY PLOTS AND SECONDARY STRUCTURE PREDICTIONS	109

CHAPTER FOUR

4.0	DISCUSSION	119
4.1	IgA AND IgG SERUM ANTIBODIES TO RECOMBINANT EAs (P54 AND P138) AND VCA (P23) PROTEINS IN ELISA	119
4.2	IgA AND IgG REACTIVITIES IN PRE- AND POST-TREATMENT NPC SERA	125
4.3	IgA AND IgG REACTIVITIES IN MULTIPIN PEPTIDES FROM PEPSCAN	127
4.4	ANTIGEN-ANTIBODY BINDING MECHANISMS	133
4.5	ASSOCIATION OF HYDROPATHY PROFILES, SECONDARY STRUCTURE AND PEPSCAN ANALYSIS	137
4.5.1	Hydropathy Profiles And Antigenicity	137
4.5.2	Recombinant EA p54	140
4.5.3	EBNA1	141
4.5.4	ZEBRA	142
4.5.5	Three- And 5-mer Peptides From Peptides 52, 53 and 54 of EA p54	143
	CONCLUSIONS	147
	REFERENCES	148
	APPENDICES	