

MASTER'S THESIS

Functional roles of interleukin-8 in epstein-barr virus-positive nasopharyngeal carcinoma cells

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**Functional Roles of Interlukin-8 in Epstein-Barr Virus-positive
Nasopharyngeal carcinoma cells**

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Abstract

IL-8 is strongly expressed in the tissues of nasopharyngeal carcinoma (NPC). The IL-8 expression has been found to contribute to cell growth and metastasis by binding to its receptors CXCR1 and CXCR2. However, the expression of IL-8 and its receptors in the growth and development in NPC has not been fully studied. In the present study, the role of IL-8 in NPC was examined. All the poorly differentiated NPC cell lines, including the EBV-positive C666-1, and the EBV-negative CNE-1, CNE-2, SUNE-1, HNE-1 and HONE-1, were found to express IL-8 and CXCR1. The expression of CXCR2 was only found in the C666-1 and CNE-1 cell lines. As EBV infection is closely associated with the development of NPC, therefore, C666-1 was selected to examine for the role of IL-8 in the growth and migration of NPC cells. Both the cell growth and migration were inhibited by the IL-8 peptide inhibitor and also the PI3K inhibitor LY294002. This observation indicated that IL-8 could promote cell growth and migration through the Akt signaling pathway. As the expression of the CXCR2 was over 300-fold higher than CXCR1, the role of CXCR2 was first evaluated and CXCR2 was found to effectively suppress the growth of C666-1.

After evaluating the role of IL-8 in C666-1 cells, the regulations of IL-8 expression were also studied. mRNA expression of IL-8 could be downregulated by the NF κ B inhibitor parthenolide or MIF-knockdown. In addition, the inhibition of MIF expression was also found to significantly correlate with the decrease in the size of tumour spheres. Expression of the potential cancer stem cell markers, CD44 and Sox2 by the tumour spheres after MIF-knockdown was greatly decreased. Results from this study suggested that MIF could be a novel therapeutic target in the treatment of NPC.

Table of Contents

	Page
Declaration	i
Abstract	ii
Acknowledgements	vi
Table of Contents	v
List of Tables	x
List of Figures	xi
List of Abbreviations	xiii
Chapter 1 Introduction	1
1.1 Overview of Nasopharyngeal carcinoma (NPC)	1
1.1.1 Epidemiology of NPC	1
1.1.2 Types of NPC	2
1.1.3 Etiology of NPC	3
1.1.4 Involvements of Epstein-Barr virus (EBV) in NPC development	6
1.1.5 Treatments of NPC	7
1.2 Chemokines	9
1.2.1 Classification of chemokines	9
1.2.2 General features of chemokines	10
1.2.3 Regulation of chemokines expression	11
1.2.4 Role of chemokines in tumor microenvironment	12
1.3 Chemokine signaling as a cancer therapeutic target	14
1.3.1 Using chemokines for therapy	14
1.3.2 Therapeutic targeting of chemokines	15
1.3.3 Therapeutic targeting of chemokine receptors	17

1.4 Aims of study	19
Chapter 2 Materials and Methods	23
2.1 Materials for Cell culture	23
2.1.1 Culture media	23
2.1.2 Completion of media	24
2.1.3 Buffers and solutions	25
2.2 Chemicals	25
2.3 Reagents for polymerase chain reaction (PCR)	27
2.3.1 Reagents for preparation cDNA	27
2.3.2 Reagents for PCR	29
2.3.3 Reagents for DNA gel electrophoresis	30
2.4 Reagents for real-time PCR	31
2.5 Reagents for Enzyme-linked immunosorbent assay (ELISA)	32
2.6 Reagents for cell migration assay	33
2.7 Reagents for spheroid formation assay	34
2.8 Reagents and buffers for Western blotting	35
2.8.1 Buffers for the preparation of protein samples	35
2.8.2 Reagents for the preparation of stacking gel and resolving gel	36
2.8.3 Reagents for Gel Electrophoresis	38
2.8.4 Reagents for immunoblotting	40
2.8.5 Washing buffer	40
2.8.6 Blocking buffer	41
2.8.7 Antibody diluting buffer and Antibodies	41
2.8.8 Reagents for image development	43
2.9 Reagents for transient transfection with siRNA	43
2.10 Reagents for immunofluorescence staining	45
2.11 Cultivation of NPC and immortalized NP cell lines	46

2.12 PCR	47
2.12.1 cDNA samples preparation	47
2.12.1.1 RNA extraction	47
2.12.1.2 Reverse transcription	48
2.12.2 Polymerase chain reaction	49
2.12.3 DNA gel electrophoresis	50
2.13 Real-time PCR	51
2.14 Enzyme-linked immunosorbent assay (ELISA)	52
2.15 Migration	54
2.16 Hanging drop Assay	54
2.17 Spheroid formation Assay	55
2.18 Western blot	55
2.18.1 Protein Extraction	55
2.18.2 Determination of protein concentration	56
2.18.3 Preparation of protein samples	57
2.18.4 Gel electrophoresis	57
2.18.5 Preparation of Membrane and transfer sandwich	58
2.18.6 Immunoblotting	58
2.18.7 Image development	59
2.19 Transient transfection with siRNA	59
2.20 Immunofluorescence staining	60
2.21 Statistical analysis	61
Chapter 3 Effects of IL-8 on the migration and growth of NPC cells	62
3.1 Introduction	62
3.2 Results	64
3.2.1 Expression of IL-8, CXCR1, and CXCR2 mRNA in	64

	NPC cell lines	
3.2.2	Secretion of IL-8 by C666-1 cells	65
3.2.3	Effect of exogenously added IL-8 on the migration of C666-1 cells	65
3.2.4	Effect of exogenously added IL-8 on the growth of C666-1 cells	66
3.2.5	Exogenously added IL-8 stimulates the expression of p-Akt	
3.2.6	Effect of IL-8 peptide inhibitor on the migration of C666-1 cells	67
3.2.7	Effect of IL-8 peptide inhibitor on the cell growth of C666-1 cells	68
3.2.8	Inhibition of the expressions of p-Akt by IL-8 peptide inhibitor	69
3.2.9	Effect of the PI3K inhibitor LY294002 on the migration of C666-1 cells	70
3.2.10	Effect of the PI3K inhibitor LY294002 on the growth of C666-1 cells	70
3.2.11	Effect of CXCR2 inhibitor SB225002 on the growth of C666-1 cells	72
3.2.12	Effect of CXCR2 inhibitor SB225002 on the expression of p-Akt	73
3.3	Discussion	74
Chapter 4 Mechanisms of IL-8- mediated growth of the NPC cells		104
4.1	Introduction	104
4.2	Results	106
4.2.1	Effect of Snail siRNA treatment on the expression of IL-8 mRNA	106
4.2.2	Effect of NFκB inhibitor parthenolide on the expression of IL-8 mRNA	107
4.2.3	Expression of MIF and CD74 mRNA in NPC cell lines	107
4.2.4	Expression of IL-8 mRNA is reduced in MIF siRNA treated	108

C666-1 cells	
4.2.5 Reduction of tumour spheres formation by MIF siRNA treated C666-1 cells	109
4.2.6 The expression of CD44 and Sox2 by tumour spheres after MIF siRNA treatment	110
4.2.7 Effect of CD74 siRNA treatment on the formation of tumour spheres	110
4.3 Discussion	112
Chapter 5 Conclusion and Future Perspectives	129
5.1 Conclusion	129
5.2 Future Perspectives	130
List of References	132
Curriculum Vitae	146