CONTENTS

ACKNOWLEDGEMENTS		i
ABSTRACT		ii
ABSTRAK		iii
LIST OF FIGURES		iv - viii
LIST OF TABLES		ix - x
1.	Chapter 1 - Introduction	1
1.1	General	1
1.2	Key Pesticides	7
1.3	Pesticide Industry Profile	8
1.4	Vegetable Farms in Malaysia	8
1.5	Other Problems Related to the use of Pesticides	9
1.6	Prevention of Negative Effects of Pesticides	10
1.7	Maximum Residue Level (MRL) and Legislation	13
1.8	Pesticide Residues in Food	14
1.9	Analytical Procedures	16
1.10	Liquid Chromatography-Mass Spectrometry (LC-MS)	26
1.10.1	Thermospray (TSP) Interface	27
1.10.2	Particle Beam (PB) Interface	29
1.10.3	Atmospheric Pressure Ionisation (API)	32
1.10.3.1	Electrospray (ESP)	33

1.10.3.2	IonSpray (ISP)	34
1.10.3.3	Heated Nebuliser	35
1.11	Flow Injection Analysis (FIA) in Pesticide Formulations	39
1.12	Objective	41
2	Chapter 2 - Experimental	43
2.1	Chemicals and Materials	43
2.2	Standard Stock Solutions	44
2.3	Glassware	45
2.4	Optimising the Heated Nebuliser Parameters	46
2.5	Samples	46
2.6	Sample Preparation	48
2.7	Liquid Chromatography-Atmospheric Pressure Ionisation-Mass Spectrometry(LC-API-MS) and a Heated Nebuliser	51
2.8	Flow Injection Analysis –Atmospheric Pressure Ionisation-Mass Spectrometry (FIA-API-MS) and a Heated Nebuliser	54
2.9	Quantification	55
3	Chapter 3 - Result and Discussion	56
3.1	Determination of Optimum Parameters	56

3.1.1	Selection of Ionisation Mode [positive/negative chemical ionisation (PCI/NCI) for identification / quantification	56
3.1.2	Eluent Flow Rate	84
3.1.3	Heated Nebuliser Probe Temperature	86
3.1.4	Orifice and Focusing Ring Voltages	88
3.2	Identification and Confirmation of Pesticides	91
3.2.1	Collision Induced Dissociation (CID)	91
3.2.2	Retention Time	104
3.3	Clean-Up	104
3.4	Detection Limits	107
3.5	Linearity of Calibration Curves	108
3.6	Recoveries of Pesticides	109
3.7	Precision and Accuracy	110
3.8	Application on Real samples	112
3.9	Measurement for some selected Pesticides Formulations	115
4	Chapter 4 - Conclusion	116
	References	119