CONTENTS

List of Tables ........................................................................................................... I
List of Figures............................................................................................................. II-III
Abbreviations............................................................................................................. IV-V

CHAPTER-1: INTRODUCTION 1-7

CHAPTER-2: REVIEW OF LITERATURE 8-44

2.1. Immunology and plants as immunomodulatory agents........ 8-23
2.2. Cancer and anti-cancer drug discovery from plants.......... 24-40
2.3. Prunus cerasus L. a general profile................................. 41-44

CHAPTER-3: MATERIAL AND METHODS 45-73

3.1. Collection of plant material .............................................. 45
3.2. Preparation of different plant extracts .............................. 45
3.3. Screening and selection of most immunopotent extract ...... 46-50
3.4. Experimental Animals ..................................................... 50
3.5. Toxicity study of selected bioactive extract PcMFE........... 50-51
3.6. In vivo immunomodulatory studies of selected extract PcMFE................................................................. 51-55
3.7. Fractionation of PcMFE and immunocharacterisation of the prepared fractions................................................. 55-56
3.8. In vivo immunological studies of bioactive fraction (EAFR). 56-57
3.9.1. Isolation of molecules from the EAFR of PcMFE.......... 58-59
3.9.2. Chemical characterization of the bioactive EAFR and its PcMFE................................................................. 59-60
3.10. In vitro immunomodulatory study of the isolated Compounds........................................................................... 62
3.11. In vivo immunological studies of the selected immunopotent molecule ......................................................... 62-63
3.12. In vitro cytotoxicity study of PcMFE and its isolated compounds........................................................................ 64-66
3.13. In vivo Anti-cancer studies of PcMFE and its two bioactive compounds............................................................... 67-70
3.14. Mechanistic studies of the most potent anticancer molecule (QCTN).............................................................. 70-72
3.15. Statistical analysis............................................................ 73

CHAPTER-4: RESULTS AND DISCUSSION 74-126

4.1. Selection of most potent extract of P. cerasus L. based on the in vitro immunological potential ......................... 74-77
4.2. Acute toxicity study and effect of PcMFE on body and lymphoid organs weight……………………………………. 78
4.3. In vivo immunological studies of selected bioactive PcMFE... 79-83
4.4. Fractionation of the PcMFE and in vitro immunomodulatory activity of its fractions…………………………………….. 83-84
4.5. In vivo immunological studies of the bioactive EAFR of PcMFE …………………………………………………………85-90
Discussion of phase-I…………………………………………………… 91-96
4.6. Isolation of compounds from the bioactive EAFR of PcMFE…97
4.6.1. HPLC characterization of the EAFR and its PcMFE…….. 98-99
4.8. In vivo study of most immunopotent molecule DAZ ……… 105-108
Discussion of phase-II…………………………………………………. 109-112
4.9.1. Cytotoxicity potential of PcMFE against different human cancer cell lines………………………………………………113
4.9.2. Effect of isolated compounds on inhibition of cell proliferation……………………………………………………………………….. 114-115
4.9.3. In vivo anti-cancer activity of PcMFE and its two active molecules ………………………………………………………………………… 116-118
4.10. Mechanism of Quercetin induced cell death in NCIH322 cell line …………………………………………………………………………………. 119-122
Discussion of phase-III…………………………………………………. 123-126

CHAPTER-5: SUMMARY AND CONCLUSION 127-130

CHAPTER-6: REFERENCES 131-155

List of Research Publications