

TABLE OF CONTENTS

Abstract	iii
Acknowledgements	iv
List of figures	v
CHAPTER 1	
Introduction and Objectives	1-5
1.1 Background	1
1.2 Objectives	5
CHAPTER 2	
Literature Review	6-22
2.1 Biodegradable Polymers Classification	6
2.1.1 Agro- Polymers	7
2.1.2 Biodegradable Polyesters	10
2.1.3 Bacteria based	10
2.1.4 Bio based	11
2.1.5 Non-renewable polyesters	11
2.2 PVA	12
2.2.1 PVA Biodegradation	12
2.3 Biodegradation of Polymer Blends	13
2.3.1 Starch/PVA Blends	14
2.4 Sericin	14
2.4.1 Structural information	14
2.4.2 Sericin extraction	17
2.4.3 Extraction methods	18
2.5 Bioactive Agents	18
CHAPTER 3	
Experimental and Methods.....	22-27
3.1 Materials	22
3.2 Methods	22
3.2.1 Sericin extraction and characterization	22
3.2.1.1 SDS-PAGE.....	23
3.2.1.2 UV/visible spectroscopy.....	23
3.2.2 Preparation of biodegradable blend films.....	23
3.2.2.1 Pure sericin/PVA blend films.....	23
3.2.2.2 Bioactive sericin/PVA blend films.....	24
3.3 Characterization.....	25
CHAPTER 4	
Results and Discussion.....	28-57
4.1 Characterisation of extracted Sericin.....	32
4.1.1 Molecular Weight.....	32
4.1.2 U V Absorption Spectra.....	32

4.2 Characterisation of Sericin/PVA Blended Films.....	33
4.2.1 Mechanical testing	
4.2.1.1 Optimisation of Blended Films.....	33
4.2.1.2 Tensile Strength of Blended Films.....	36
4.2.2 Structural Properties	
4.2.2.1 FTIR.....	38
4.2.2.1.1 Effect of GA.....	38
4.2.2.1.2 Secondary structure analysis	40
4.2.2.1.3 Effect of glycerine.....	41
4.2.2.2 X ray Diffraction (XRD).....	44
4.2.3 Thermal Properties	
4.2.3.1 TGA.....	48
4.2.3.2 DMA.....	51
4.2.4 Morphological Testing	
4.2.4.1 Scanning electron microscopic (SEM).....	54
4.2.5 Light transmittance and film transparency.....	55
4.2.6 Antimicrobial Testing.....	57
 CHAPTER 5	
Conclusion and Future Scope.....	58-60
Conclusion.....	58
Future scope.....	60
 References	61-68