[**List of Acronyms** 31](#_Toc427323780)

[**Justification for the work** 33](#_Toc427323781)

[**I. Introduction** 37](#_Toc427323782)

[1. Edible and biodegradable polymer matrices used as food packaging materials 40](#_Toc427323783)

[2. Starch: sources and main uses 41](#_Toc427323784)

[3. Strategies to improve the functionality of biopolymer-based films 49](#_Toc427323785)

[4. Bioactive compounds with antimicrobial activity 63](#_Toc427323786)

[**II. Objectives** 105](#_Toc427323787)

[**III. Chapters** 109](#_Toc427323788)

[**Chapter I:** Effect of amylose:amylopectin ratio and rice bran addition on starch film properties. 111](#_Toc427323789)

- [Characterization of starch films with different amylose:amylopectin ratio. Effect of rice bran addition. 113](#_Toc427323790)

[**Chapter II:** Study of poly(vinyl alcohol) (PVA)- starch blends. Effect of nano-reinforcements (CNCs). 157](#_Toc427323791)

[**Part A:** Study of poly(vinyl alcohol) (PVA) - starch blends. 159](#_Toc427323792)

- [Physical and microstructural properties of biodegradable films based on pea starch and PVA; Properties and ageing behaviour of pea starch films as affected by blend with poly(vinyl alcohol). 161](#_Toc427323793)

[**Part B:** Effect of nano-reinforcement (CNCs). 205](#_Toc427323794)

- [Effect of cellulose nanocrystals on the properties of pea starch- poly(vinyl alcohol) blend films. 207](#_Toc427323795)

[**Chapter III:** Development of starch-PVA active films, containing AgNO3 or essential oils. Effect of antimicrobials on film biodegradability. 243](#_Toc427323796)

- [Physical and antimicrobial properties of starch-PVA blend films as affected by the incorporation of natural antimicrobial agents. 245](#_Toc427323797)

[- Development and characterization of active films based on starch-PVA, containing silver nanoparticles. 279](#_Toc427323798)

- [Biodegradability behaviour of starch-PVA films as affected by the incorporation of different antimicrobials. 315](#_Toc427323799)

[**Chapter IV:** Active films for fresh cheese preservation. 353](#_Toc427323800)

- [Quality of goat´s milk cheese as affected by coating with edible chitosan-essential oil films. 355](#_Toc427323801)

[**IV. General Discussion** 381](#_Toc427323802)

[**V. Conclusions** 395](#_Toc427323803)