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## **DOCTOR OF PHILOSOPHY**

### **Use of novel chitosan derivatives for the control of food-borne pathogens**

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*Award date:*  
2013

*Awarding institution:*  
Bangor University

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# **Chapter 1: Introduction**

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## **Chapter 2: Literature Review**

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## **Chapter 3: Co-factorial influence of pH-concentration on antimicrobial activity of chitosan against *E. coli* O157:H7**

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Presented to the 3th Symposium for Libyan Students in UK Universities, Sheffield Hallam University; Jun 2010. UK. Abstract published in conference book.

# **Chapter 4: Differential biocidal actions of chitosan and acetic acid against *E. coli* O157**

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## **Chapter 5: Antibacterial action of chitosan-arginine against**

### ***Escherichia coli* O157 in chicken juice**

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Published in Food Control 26, 206-211 (2012); presented and published in SfAM Summer Conference (2011) and 5<sup>th</sup> Saudi Science Conference 16-18/4/2012

## **Chapter 6: Susceptibility of *Escherichia coli* O157 to chitosan-arginine in beef juice is affected by bacterial cell growth phase**

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Presented and published to 23<sup>rd</sup> International ICFMH Symposium; FoodMicro2012: Global Issues in Food Microbiology, 3-7 September (2012); Istanbul-Turkey; and All Wales and West Microbiology meeting, Swansea University, September 13-14th, 2012

## **Chapter 7: Preparation of novel antimicrobial meat packaging using chitosan-arginine**

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## **Chapter 8: General discussion**

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# Appendix

**Appendix 1:** Survival and metabolic activity of lux-marked *Escherichia coli* O157:H7 in different types of milk.

**Appendix 2:** Testing of surface spoilage bacteria in meats by application of Woolcool® packaging.

**Appendix 3:** A comparison of the microbiological quality of meat packaged in Woolcool® boxes compared to conventional EPS boxes.

**Appendix 4:** Photographs of experimental apparatus

## **Appendix 1: Survival and metabolic activity of lux-marked *Escherichia coli* O157:H7 in different types of milk**

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## **Appendix 2: Testing of surface spoilage bacteria in meats by application of Woolcool<sup>®</sup> packaging**

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# **Appendix 3: A comparison of the microbiological quality of meat packaged in Woolcool® boxes compared to conventional EPS boxes**

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## **Appendix 4: Photographs of experimental apparatus**