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## **DOCTOR OF PHILOSOPHY**

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

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

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## **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**